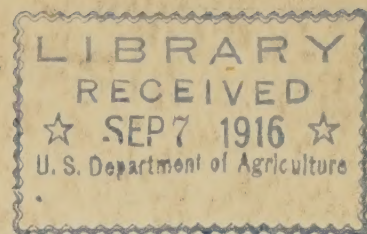


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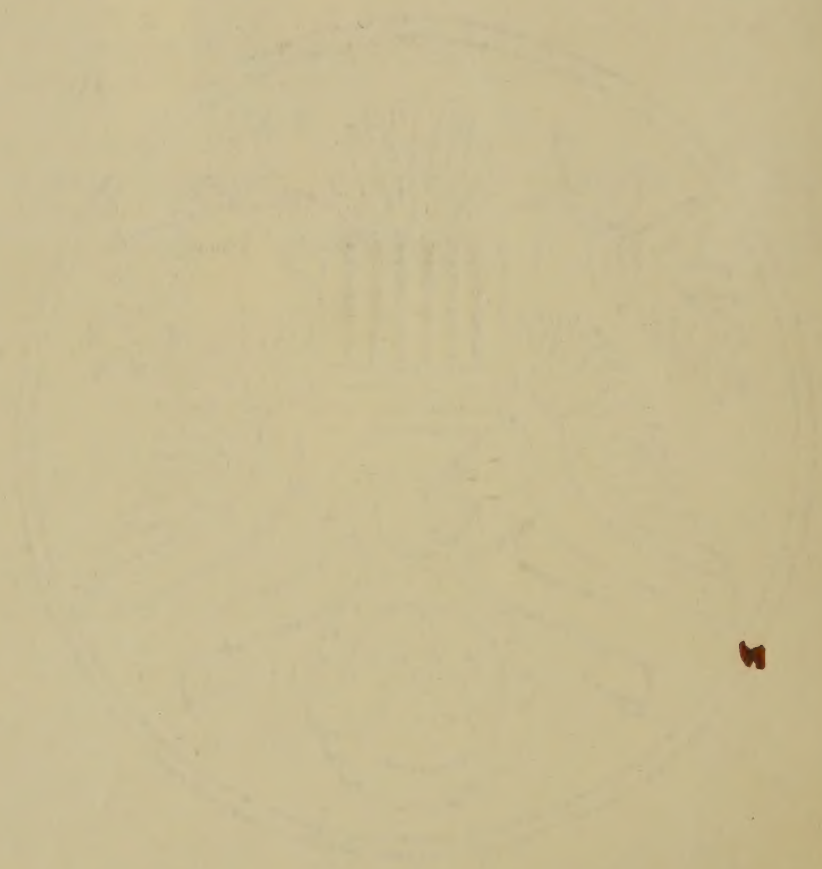
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P R O C E E D I N G S
OF
CONFERENCE ON SECONDARY AGRICULTURAL
EDUCATION.

HELD AT
CHITTENDEN HOTEL, COLUMBUS, OHIO,
FEBRUARY 22, 1915.



P R O G R A M .

F O R E N O O N .

- 9.00-9.10 1. Conference called to order and brief outline of purpose of conference.
- C. H. Lane, Washington, D. C.
- 9.10-9.40 2. Address, Pres. W. O. Thompson, Ohio State University.
- 9.40-11.15 3. What shall be required in the course of study for teachers of secondary agriculture--
- (a) In agricultural subjects.
 - (b) In science.
 - (c) In the humanistic branches.
 - (d) In professional training.
 - (e) In farm experience.
 - (f) Specific work to be covered in the special methods work in agriculture.
- W. R. Hart, Massachusetts.
- Discussion led by G. A. Works, New York.
- 11.15-12.00 4. Proper preparation and equipment, academic and professional, of teachers in schools of agriculture.
- Chas. G. Maphis, Virginia.
- Discussion led by J. E. Metzger, Maryland.

A F T E R N O O N .

- 2.00-2.30 1. Most valuable lines of agriculture to be pursued in secondary schools and to what extent should they extend?

F. B. Jenks, Vermont.

Discussion led by L. H. Dennis, Pennsylvania.

- 2.30-3.00 2. Methods and agencies in teaching agriculture in the secondary school.

Geo. H. Whitcher, New Hampshire.

Discussion led by Thomas I. Mairs, Pennsylvania.

- 3.00-5.00 3. Inspection of work in agricultural education at the Ohio State University.

E V E N I N G .

- 7.30-8.45 1. Character of cooperation between--
 (a) Land-grant colleges.
 (b) State departments of public instruction.
 (c) U. S. Bureau of Education.
 (d) U. S. Department of Agriculture.

A. C. Monahan, Washington, D. C.

Discussion led by L. S. Hawkins, New York.

- 8.45-9.15 2. Five-minute reports from State officials on the successes and failures of the year.

- 9.15- 3. Report of Resolution Committee in regard to recommended policies and interests for the good of secondary agricultural education for next year.

F O R E N O O N S E S S I O N .

The conference was called to order at 9.00 o'clock by Dr. Foght, of the Bureau of Education, who acted as chairman, and who explained Mr. Lane's sudden illness and inability to be present.

The Chairman: I will ask Mr. Dennis, in Mr. Lane's absence, to explain as fully as he can the purpose of this conference.

Mr. Dennis: Mr. Chairman, and gentlemen of the conference:

Mr. Lane and I have had a number of conferences upon this subject.

Mr. Lane and I felt that it would be a good idea for those men directly interested in the question of secondary agricultural education to get together and discuss the problems that deal with this particular subject. There are a number of organizations in which some of these subjects are discussed, but it has developed in a good many of these meetings that the direct line of secondary agricultural education has not had the opportunity for the full and free discussion that would be possible in a conference like this, where we get together for the purpose of concentrating our entire time and attention upon the subject. The American Association for the Advancement of Agricultural Teaching has been the organization from which we have received a great deal of help, but that organization necessarily must take up many phases of the subject of agricultural education. It does not confine itself to the proposition of secondary agricultural education. There are two types of men who are directly interested in this proposition--the men who have charge of agricultural education in our colleges and who are preparing the men to teach agriculture, and the men who are directing this work as representatives

of the various State departments of education. There ought to be a very close cooperation between the agricultural education departments of our colleges and the State departments of education. In some States, as you know, the work is being directed from the agricultural education department of the college. These two types of men are the ones most interested in the preparation of secondary instruction in agriculture. There are some problems that would be of interest to these men that perhaps might not interest some of the other men who come to some of the other meetings. There are other topics taken up in the meetings of the American Association for the Advancement of Agricultural Teaching that are of interest, but these specific problems, it was felt by a number of us, ought to be taken up in a little conference by the men who are directly interested in the development of this particular phase of agricultural education. It seems to me that a small body of men directly and vitally interested in a certain phase of a problem can accomplish much in such a conference as this.

It has been my pleasure during the last several years to attend the meetings of the Society for the Promotion of Industrial Education and I have learned from those conferences, from the methods that are there employed, that it pays to get a small body of men together for the purpose of concentrating the attention of those men vitally interested upon those particular things. I have found further that the recommendations of such bodies of interested men usually receive great consideration. We have attempted at these conferences to have an agricultural section. We felt that it was not right for the men in charge of industrial education to have more influence upon the question of Federal aid for vocational train-

ing and upon the drafting of State laws than the men directing agricultural education in the State, because agricultural education in our high schools is vocational education as much as any industrial education that is or will be incorporated into our public school system. In order to secure proper recognition from these people we have attempted to have an agricultural section. We have felt in these conferences held in the East that too small a territory was represented; all of the men who were vitally concerned were not there. We had no organization, however, and there was no one authorized to invite men from the various States having charge of agricultural education or in the State departments.

Mr. Lane in talking this over with some of us found that we would be willing to respond to a conference on the part of some one in the Government Service. It was suggested that all of the men who were really vitally interested in secondary agricultural education be asked to come to the conference. Mr. Lane made quite a study of the feasibility of holding a conference and tried to figure out the best points and how many districts there should be. He first suggested a New York City conference. After going over the matter carefully with a number of men he decided upon Columbus. That is practically all I know of the purpose of this conference as far as Mr. Lane explained it to me.

I think we ought to express ourselves in some manner as to the future of this conference and we ought to be thinking it over during the day. If we feel it is advisable and feasible for us to get together once or twice a year in connection with some other meeting, just before or just after, or in a separate conference, if it is possible to do that, I be-

lieve it would be a good thing to express ourselves in some such manner before we leave here so that Mr. Lane can have the information as to what is advisable. It is not always possible to do the things we want to do. I know there are a great many men who want to be here to-day who simply could not get here. In making recommendations for future conferences I think we will have to consider the possibility of getting the men here. There is a limit as to the amount of traveling any of us can do.

The Chairman: I think the statement made by Mr. Dennis makes the calling of the meeting clear. Is it the wishes of the gentlemen present to discuss this any further at this time or shall we postpone this until later in the day? I know there was a question in my mind when I received a program as to the advisability of this sort of a conference. Would it not, in a way, interfere with the work of the Association of American Agricultural Colleges and Experiment Stations? A question of that sort came into my mind and I am not clear upon this point now. Is it the desire to dwell upon this subject at this time?

I notice President Thompson, who is on the program for the first address of the morning, is not with us. Can any one give us information in regard to whether he will be here?

Professor Bricker: To-day is a big day at the University. It is called Ohio State Day and the legislature is supposed to be on the campus by nine o'clock. It is very unlikely that either the President or the Dean will be here.

I might add just a word to what Mr. Dennis has said. In a letter from Mr. Lane I got the impression that another item was to enter into

this meeting. I understand the intention is to bring out the ideas of the different men engaged in agricultural education, to get a clear conception of the problems presented in this work for final discussion in a meeting, perhaps in San Francisco in August, where final action may be taken. These may be considered as meetings in which crystallization of ideas might take place. I thought Professor Dennis did not bring this point out plainly.

The Chairman: Would it not be in order to hear from Professor Bricker more in detail inasmuch as I take it for granted he may represent President Thompson this morning.

Professor Bricker: Mr. Chairman, and gentlemen: I did not prepare for any address, but I want to say that every man here is mighty welcome to Columbus and especially welcome by the University and the department which I represent. The topics which are given on the program, it seems to me, are very vital at this time. In a letter received from Mr. Lane he said that out of the topics suggested to him by the men to whom he had written, the ones he selected for discussion here were those pertaining to the training of secondary teachers of agriculture in the high school and that the program would be largely made up of that general topic. It seems to me that one other topic that might be discussed is that of cooperation among the various organizations in the country for agricultural teaching. Here we have the American Association for the Advancement of Agricultural Teaching, which, in a way, is an outgrowth of the Association of American Agricultural Colleges and Experiment Stations, the college section of which deals with these problems of agricultural teaching. Those who were pres-

ent at the Washington meeting will remember that quite a little time was given to this subject by the last named association. They have a standing committee that considers questions in agricultural teaching. Then there is the organization of the National Education Association called the Rural and Agricultural Section, which devotes itself to practically the same problem; and then a section of the vocational men is giving attention to agricultural teaching; and, besides, there is another organization recently formed of rural teachers and agricultural education men, I believe at Louisville, Ky. I am unable to say much about that organization. Perhaps some one else present knows more about it than I do. There are five or six organizations in the field with the same idea in mind--the advancement of agricultural teaching. It seems to me, gentlemen, we need to get together. In propagating these ideas it may be well to start with these various organizations, but if we could unite in one big organization we could do more work. A sledge hammer blow always gains more than a blow with an ordinary hammer. I think we might as well consider that phase.

Further, in regard to some things that President Thompson might say in regard to local matters. I notice there is one place on the program for visiting the University and looking into the facilities we have here for the training of teachers. This afternoon, I believe, between three and five, is set aside for that trip. I should be very glad to do what I can to show the men here what equipment we have for this work at the University. I can show you the classroom and office where the main work is done and then show you the places to which we take excursions to study farm machines and live stock and where we do our work in the soil labora-

tory, and other points of interest about the University. Then, if we had time, I could take you out to our practice school. I do not know, perhaps Professor Hart will discuss this matter of practice teaching. We have felt here that after a man gets his training in the college of agriculture and his general training in the college of education that practice in teaching is the one thing he lacks. So many of our young agricultural teachers go out and make flat failures, because they do not know how to teach. They may have the theory but they have never had the practice.

Last year I made arrangements with a town about ten miles from Columbus, Grove City, where we took charge of the agricultural work. Two young men entered the work of practice teaching in the college of education and their special line was agricultural education, so I had charge of them. We took turn about teaching. The young men would teach one time and I would teach another time. They would observe my teaching and I would criticise their teaching. One of them left in April and took up the agricultural education work at Friends' Academy, in Pennsylvania. I believe he is making a good success. The other young man took charge of the work at Carey, Ohio. Besides the agricultural work, he had charge of some of the science work and of the manual training work. After being there one semester he was called to the Waite High School in Toledo, where he is instituting a 4-year course and has charge of it. His success is so marked that he has also been employed recently as teacher of agriculture in one of the summer schools of the State. It paid that young man to take practice teaching. Now, we have arrangements with the Clin-

ton High School, practically in the country, where a 4-year course in agriculture is being organized and the department has charge of that work, both of instituting it and teaching the course. We, therefore, now have a practice school for our boys. I would have to take you out there to show you our facilities. As most of you know the conditions you perhaps will not care to go out there.

Another line of work we have here is extension work from this department. I am carrying on at the present time an extension school at Jackson, Ohio, seventy-five miles southeast of Columbus. Every time I go down there I get up at 3.30 in the morning, and you extension men know what that means. I could not take you to Jackson, but you who have read the articles I have written on the subject will understand the nature of the extension school. It is simply bringing the teachers of a county into a central place and there giving them elementary instruction in the way of definite outlines and definite lessons that they may use in their schools in the following two or three weeks. Through that kind of instruction we are able to reach the boys and girls right in the rural schools.

These are some of the lines of work that we do here at Ohio State. If you are interested to make that trip this afternoon I shall be glad to show you what I can of the local equipment. Again I say, the men here are certainly welcome and if I can do anything to facilitate this meeting do not hesitate to call on me.

The Chairman: I think I speak for all of us when I say we will be delighted to go out to the college this afternoon from three to five. We still have a little time, I think, before we need to go to the next topic,

and yet not a great deal of time either.

Possibly we may just as well turn to the next topic at once.

"What shall be required in the course of study for teachers of secondary agriculture-- (a) in agricultural subjects, (b) in science, (c) in the humanistic branches, (d) in professional training, (e) in farm experience, and (f) specific work to be covered in the special methods work in agriculture," is the topic to be discussed by Prof. W. R. Hart, of Massachusetts.

Professor Hart: I have a few suggestions to offer bearing on the subject of the training of teachers and I am still unable to separate them, the course of study the teacher should pursue while training and the training of the teacher.

Training teachers of secondary agriculture is one of the most important as well as most difficult problems American pedagogy has had to face. In fact, the training of teachers for any kind of secondary school work is still largely in the theoretical and trial stage in the country. The need for specialized training for secondary teachers is not felt with sufficient keenness to make such training general, much less, universal. Nevertheless, before we have been able to formulate generally accepted standards for the training of secondary teachers in any line of work, there is thrust upon us the problem of preparing teachers for this specialized form of instruction. But the imposing of such a task at this juncture may be a fortunate circumstance. There is a pronounced demand that these teachers be trained for their work. The problem of their training is fairly definite in aim. The end sought in their teaching

is measurably limited, which is the theory and practice of agriculture. In view of these facts, it may be the very opportunity which American pedagogy has needed in order to demonstrate its real value in the art of training secondary teachers.

As to farm experience. Taken at its face value, this seems like a very simple and unambiguous expression. But, when its application is submitted to a brief analysis, its simplicity disappears and its meanings become so diverse as to be almost opposite. In the mind of one, it suggests only such simple farm arts as feeding, harnessing, plowing, planting, cultivating, harvesting, chopping, repairing, ditching, fencing, buying, selling, and the dozens and dozens of other routine acts that go to make up the manifold nature of farm activities. Knowing how to do these things is thought of as practical experience. The person able to do these things with more or less skill is thought of as having practical knowledge.

In the minds of others, practical experience means the ability to decide when to plow as well as to know how to plow, to know when to spread manure as well as how to drive the manure spreader, to know when to cultivate as well as how to handle the cultivator, to know where and how to lay a drain as well as how to dig a ditch, to know how to readjust a worn machine as well as to set up a new one. These illustrations may be multiplied indefinitely. They serve to show that practical experience may be thought of very differently by different persons. It may have an application even broader than the foregoing suggestions indicate.

Practical experience is also thought of in the commercial or man-

agerial sense. Whether to plant the same crop year after year on the same ground, or, to rotate; whether to plant all the land to a single crop, or, to diversify; whether to keep live stock, or, to sell the surplus stock feed; whether to raise crops suitable for human consumption, or, for animal consumption; and whether to tile drain, or, surface drain the land, are all practical questions and require practical experience in their determination.

From this brief analysis, it seems plain that this expression may from different viewpoints be made to include knowledges of how to do the endless round of farm duties reaching all the way from the crudest of the farm arts to the most refined applications of science in farm management.

In agricultural subjects. This, I take it, refers to the breaking of the college courses into the two general divisions of agriculture and horticulture, and the subdivision of these into such topics as agronomy, animal husbandry, poultry husbandry, farm management, horticulture, floriculture, market gardening, landscape gardening, and forestry. These topics have become departmental names under which are given from four to eight or more courses in the agricultural colleges. The man in preparation for the teaching of secondary agriculture must choose from this great body of material such parts as will approximate a desirable equipment, because to take it all is impossible. For the guidance of students in the choice of material, these two principles are suggested. First, take one or two courses in as many departments or agricultural subjects as the limitations of time and schedule permit. This guide alone would result in introductory and somewhat superficial knowledge over a wide range of

subjects, which is not the most desirable ideal. To offset this tendency to superficiality, the second principle is that the student select some one subject or department for intensive study. He should take all that the college offers in this for the sake of its effect in giving him a feeling of mastery in the matter of accomplishment, also for giving him the courage of assurance in his work as a teacher. These two feelings--mastery and assurance--as by-products of his studies will enable the teacher to capitalize all his equipment to better advantage.

In scientific knowledge: Some knowledge of chemistry, physics, and biology should be a part of the equipment of our ideal teacher. He need not be a broadly trained chemist, but he should know the chemistry of how a soil may be sweetened and how fertilizers and sprays are manufactured; not a trained bacteriologist, but how milk sours, apples decay, and composts ferment; not a trained physicist, but the application of the laws of force and motion in machinery; not a trained botanist, but the behavior of plants under the influence of light, heat, moisture, heredity, etc.; not a trained entomologist, but a knowledge of the life history and feeding habits of a few dozens of the farmer's insect friends and enemies. The really usable amount of science, while quite varied as to the fields from which it comes, is somewhat limited in quantity. It may turn out that a few possible scientists may be sacrificed in the process, but the teacher of secondary agriculture must be made with only a moderate amount of that ingredient known as pure science. This, however, does not mean that he must not be scientific, nor, that he does not know enough science to tell how to extricate himself from a difficulty when he finds himself in one.

The method of using both his knowledge of agriculture and of science leads us naturally to the professional aspect of the course of study.

This should proceed along several rather distinct lines.

1. A study of his own mental activities in the processes of learning.
2. A study of how to take stock of the mental equipment of his pupils.
3. Some drill in the organization of lesson material and its adaptation to teaching purposes.
4. Practice in the presentation of this organized material in the form of sample lessons before his own classmates for criticism and discussion of principles underlying good teaching.
5. Observation of real teaching, and practice-teaching under observation and guidance.
6. A study of the relation of what he proposes to teach to the needs of the community.
7. A study of the theory of education broad enough to enable him to see the social as well as the economic bearing of agriculture in a scheme of education.

8. A study of the philosophical distinction between fact and conclusion, between practice and theory, between observation and inference, between experimental facts as a means of reaching general truths or laws, and the use of laws for the illumination of mysterious facts. In good teaching it more often happens that a well observed fact throws light into some principle than that a memorized principle illuminates a fact.

In this respect, the teacher of secondary agriculture stands alone and unique. There is nothing quite like him in the whole realm of teaching. Teaching the arts of agriculture in a scientific way, he is a sort

of high-priest mediating between a multitude of arts and a number of sciences. Having a knowledge of both the science and the art of agriculture he can use his science to explain processes or to throw light upon difficulties in the art. He can also use the facts and processes in the art of agriculture as a means of enabling the mind of the learner to unfold into the comprehension of scientific truth. Herein lies the basic factor that lifts practice out of the realm of the "rule of thumb", and at the same time, lays a rational foundation for an intelligent pursuit of science.

We are just beginning to realize that the desire for an explanation of an art is the most natural motive for the pursuit of science. Agriculture stands as the door or threshold to more sciences than any other subject. It lays practically every one of the natural sciences under tribute. Hence, agriculture is the study of all studies that should precede and lay the foundation for the pursuit of systematic or pure science.

Synopsis of Proposed Course.

Admission--a high school education or its equivalent.

First Year.

1. Forty to sixty per cent of the time given to manual farm arts.
 - (a) In carrying on an agricultural project under guidance.
 - (b) In learning to do new things under direction.
2. Forty to sixty per cent of time given to studies.
 - (a) Mathematics, science, and English growing out of the project or other forms of manual work.
 - (b) Prescribed readings in some new field of thought.
3. The manual work and science study to be carried on through the summer months.

Second Year.

1. Twenty-five to forty per cent of the time given to manual farm arts.
 - (a) In carrying on new agricultural projects under direction.
 - (b) In learning to do new things and increasing skill in familiar things.
2. Sixty to seventy-five per cent of the time given to studies.
 - (a) Mathematics, science, and English growing out of the project.
 - (1) One or more of these subjects pursued systematically in class.
 - (b) Prescribed reading for reports in lines not directly related to the manual work.
 - (1) Literature, history, civics.

Third Year.

1. Twenty to thirty per cent of the time given to manual work in one or more self-initiated and self-directed projects.
2. Seventy to eighty per cent of the time given to studies.
 - (a) Mathematics, science, and English related directly to the projects.
 - (1) One or more of these subjects pursued systematically in class.
 - (b) Assigned readings for reports.
 - (1) In history, government, literature, sociology.
3. The project work to continue through the summer months.

Fourth Year.

1. Fifty per cent of the time given to practice teaching under supervision.
 - (a) Underclassmen in the manual arts.
 - (b) In schools of secondary grade, preferably agricultural schools.

2. Fifty per cent of the time given to studies.

(a) In education.

(1) Theory and practice of teaching.

(2) Theory of education.

(3) Organization and administration.

(b) Systematic pursuit of science related to agriculture.

(c) Sociology.

The Chairman: Professor Works, of Cornell University, is to lead the discussion on this topic.

Professor Works: Mr. Chairman, and members of the Conference: In this discussion I shall limit myself to what we have been able to do at Cornell thus far. Professor Hart has presented it to you from a broad standpoint and I think it wise to limit my discussion to a narrower phase of the problem.

I want to say, by way of explanation of the meagerness of what we have been able to do so far, that I have been connected with the institution only since the first of July and no work has been developed previous to that time, and not a great deal has been accomplished.

I am taking it for granted we are preparing teachers for vocational agriculture and I am planning to work primarily for the conditions such as we have in New York State naturally. With reference to the vocational experience of the individual who cares to go into teaching we find ourselves somewhat at a loss to say just exactly what should be required of the man. We sometimes hear it said that men should not be permitted to go into this work who are not farm reared. I cannot agree with that entirely. There are two things to take into consideration; first, the

individual, and, second, the character of his experience. Some of the experience the man gets who is farm reared is not altogether desirable. With reference to individuals I have known a large number of cases of men who had not more than two or three years' farm experience, who have gone out and were successful as teachers of agriculture. I find, as I have indicated, that it is very difficult to make any hard and fast statement on this matter. What I have said and what I say to the men who come to me and care to go into the teaching work is this, "I think about the minimum a man ought to have who cares to go into this work is three years' farm experience after he has reached the period in life where he can approximate the work of a man on the farm." It might be with some that could be reduced a little.

There is a thing I feel is important in this connection that we are likely to overlook. We are quite likely to emphasize the desirability of the teacher's familiarity with farm arts. To my mind there is one thing more fundamental than that, and that is a man should live long enough on a farm to get the rural viewpoint and sympathetic touch with farmers. With some it takes a long time and others get it quickly. I am taking it for granted that the man who goes out as a teacher of agriculture is not limiting his activity to the classroom. He is conducting home projects and doing extension work with farmers, and I do not see how he is going to do it unless he has the sympathetic touch with rural communities and rural life. We cannot say that the man who is farm reared in every case has this absolutely. For that reason I feel very loathe to make any hard and fast rule on it. I think that is a question

in which we have to take the individual into consideration in every case. I think the getting of the sympathetic viewpoint, and incidentally, the psychology of rural communities is as fundamental as the farm arts side of it.

When we undertake to determine the technical subjects, which the men should have before they go out, I think the departments of agricultural education have one of the hardest problems to face in this question of the training of teachers. The reason for that lies in the following conditions. The man who goes out into the secondary school must have a broad preparation in technical agriculture, and I agree with Professor Hart that there ought to be some one department in which he feels at ease--feels that he is not teaching right up to the margin of his knowledge all the time. I say this is one of the difficult problems for this reason. You cannot get this kind of preparation in most of our agricultural colleges until there is reorganization within the college itself. Most departments in the colleges of this country have built up their work with the viewpoint of making specialists.

In New York the man who wants to learn anything about the horse has to put in four hours' credit. Four hours per week for one semester. He does not have the privilege of knowing anything about the horse unless he devotes that much time to its study. I was talking to a college instructor whose course is spread over two semesters, three hours each, and he was lamenting the fact that he had to pad that course out, when, as a matter of fact, it ought to be given in about one-half to one-third of the time. There is one of the very serious difficulties we meet. Personally, I

think it ought to be possible for a student to go into the college of agriculture in every department and find a fundamental course. Probably seventy-five per cent of the students who come into the college of agriculture at Cornell are interested in that kind of a course and it is practically impossible for them to get it at the present time.

Question: Would that in any way interfere with the giving of a special course later on?

Professor Works: I think if every department would take as its aim in this fundamental course "We want to give the student the best this subject has to offer him and forget all about the possibilities of a specialist" they would stand a better chance of getting hold of some of the students than they do at the present time. I do not want to interfere with the right of a man who goes to the college and wants to become a specialist; but the majority of people who go there and want the general preparation are entitled to the privilege of getting it.

I think probably about the poorest teaching we have anywhere in the country at the present time is done in our agricultural colleges. We lament the condition secondary agriculture is in at the present time. I think the secondary agriculture of this country is better taught than college agriculture in spite of the fact that the men are coming from the agricultural colleges.

I want to mention one other thing that probably you people meet as I have met. There is a certain body of students who are only interested in the so-called practical subjects that a college of agriculture offers. I refer to such subjects as farm crops, animal husbandry, etc. In New York this is the condition that will obtain with reference to cor-

tification of teachers. No man will receive an endorsement after this year who has not taken the work in plant pathology, entomology, rural economics, and rural sociology. I consider them fully as practical as any of our so-called practical subjects the colleges are offering.

When you come to the question of professional training it is not smooth sailing there by any means. We have to learn by experience. I do not think we want to require more than twelve hours of professional training for our people, although we may make it twelve to fifteen eventually. I expect about six of that to be put in the general education work and six in the special problems with the teaching of agriculture. This present year it will be a little bit more. Going there as a stranger I asked my pupils to take the three hours in psychology, followed with three hours of educational psychology. For the ensuing year I shall abandon the general work in psychology. I have no faith in the general work in psychology when it comes to the preparation of teachers. I am confident, as ordinarily administered, it does not have much bearing on that question. We shall require our students to put in four hours in educational psychology.

Another thing we have dropped out entirely is the question of the history of education. While it is quite commonly required I have a feeling that the history of education as usually taught does not contribute much to the preparation of classroom instructors.

I think one of the big weaknesses in the preparation of teachers in the past has been in the fact that we have not recognized that we are getting them ready for rather a short period of service and if their training is to be of great assistance to them it must be of such character that they realize upon it soon after they get into the classroom.

I think that is one place where normal schools have surpassed departments of education in the colleges. While the person who went out of the normal school was meagerly equipped in academic training he realized how to put into use at once what he knew. I recognize that this is rather a narrow view. We are going to require this three or four hours in educational psychology, and three hours in principles of education. We shall devote about three hours to special methods, and I shall allow credit for three hours of teaching experience. I have not gone very far in this matter of securing teaching experience. The best I have been able to do is to get two rural high schools, one on a trolley, and the other on a steam line out of Ithaca, to enter into teaching arrangements and we have men teaching in these schools at the present time. Our complete plans call for putting of the men out into high schools as assistants to the regular teacher of agriculture for one-half year's time. We have fifty of these schools and we shall have in another year probably sixty-five or seventy. It is difficult to tell at present. I think out of these fifty schools at present I can safely pick fifteen or twenty in which young men could be put for teaching experience and my present plan is this. We will show to the board of education and the local school authorities that we will put two men out there, one for each half year; the first in the fall of the year who will be an assistant to the regular teacher of agriculture. He will help in the fall in closing up the home projects. The State Department of Education, the College of Agriculture, is interested in getting these high schools to run short courses for farm boys who will not come in for agricultural work. One of the

difficulties the school faces is the fact that it is difficult to get the necessary help for such a course. This assistant will teach some of the regular high school work and will help with the short course work, helping the regular agricultural man. The second semester we will send a man to take his place and he will help with the launching of the home projects in the spring. We are going to give the men three hours' credit for that. I think that is really all the college credit we would be justified in giving.

Question: When will these men do this work?

Professor Works: In the senior year.

Professor Bricker: It is presumed he is done with his other academic work?

Professor Works: Practically. I expect some of them will go out and come back for the second semester. They will practically be graduates of the college before they go out for this work.

Question: Will they receive any pay?

Professor Works: Yes. They will be allowed about \$80 per month of which the State Department will pay a part and the College the rest. We expect to provide supervision for this teaching. I grant that is the weakest point in the plan. We will not be able to receive sufficient help in supervision of this work so that we can have about two weeks' time spent with each one of these men by a college supervisor aside from the help he will get from the department of agriculture. The State Department of Education now has one specialist and will soon appoint another and we will work in cooperation. They will supervise as well as we. It will be only

a matter of time before we will have enough teachers who will have a sympathetic understanding of what we are aiming at so we can get results.

Professor Bricker: Where do you get your funds to supplement the salary?

Professor Works: From the College of Agriculture. They get it from the State appropriation at present. What we are looking forward to is the possibility of Federal aid in case something like the Hughes bill should pass.

People say that is rather an expensive way of training teachers. I do not know of any cheap way of training teachers myself. I feel it is a great deal better to spend a little bit of money on them while in the institution and possibly save greater social loss after they get out.

The Chairman: What about a practice school on your campus?

Professor Works: There is no practice school on the campus at Cornell. I find the contrary opinion exists in a good many cases. I would rather have this teaching done under the conditions that obtain where the men will have to go later on.

The Chairman: Do I understand that the one-teacher model school you used to have on the campus has disappeared?

Professor Works: Yes. There has not been a school there for four or five years.

I want to say just a word with reference to the scope of the special work we give to these people who want to go out into the teaching work. At the present time I have had approximately a hundred of these people and we are giving a three hour course in high school agriculture and I do the best I can to get these people ready for some of the teaching prob-

lems they will have to meet when they go out. Next year when I have help I am going to add one more hour and make it an hour of laboratory work. I do not think I shall give any more credit for it than at the present time. My department, like some of the other departments, is not too well organized so far as teaching is concerned.

We try to put them in touch with the aims of vocational agriculture. One thing I lay a great deal of stress upon is the question of organization of subject matter. I like to have these people take a topic and organize the subject matter that ought to go into the subject with reference to secondary school conditions. That has been one of the big weaknesses of the men going out of the college at the present time. I inspected work of this kind in Wisconsin and Minnesota and I remember distinctly in Wisconsin of running on two or three cases where men were simply taking the College course and giving it back to the students with the same organization as they received it in the college. I have them organize subject matter that is adapted to secondary school conditions. I do some of it myself before requiring it of them. Then all of them are put to work upon one topic which constitutes the basis of discussion until they get the viewpoint.

The tendency is, as you all know, to take a subject like types and breeds of farm animals, and to approach it from the historical standpoint. I think the history is the thing to come last. I try to get them away from two things, the organization as they have had it in their college courses, and as they find it in the textbook. I want them to know how to use textbooks intelligently, but I do not want them to be a slave to

the textbook, nor to go to the other extreme and simply follow the lecture method. I give them work on organization and presentation of individual lessons. Out of the topic they have organized in a general way they pick out individual portions and organize them for presentation to the class.

In Minnesota I made a study of the actual conditions that existed there where there were 135 high schools offering this four-year work in agriculture. I made an investigation of the amount of time devoted to different topics in a course like farm crops. I found in the southern section that the time devoted to corn out of a total of 36 weeks varied from two to twenty-two weeks right in the same territory. A man in one of the schools had been devoting sixteen weeks to animal husbandry and was not through with the study of the horse in that time. On investigation of the preparation of these men I decided that the biggest factor in determining what stress a man places on any topic was the preparation of the man himself. I recognize that we have got to concede something in that respect. The safe thing for a man to do is to teach the thing he knows well. In this course we try to lay down some fundamental principles instead of letting it be simply a question of every one's individual preparation.

We all recognize the value of the home project. In New York State no pupil can get credit unless he conducts a home project. I give them the theory of the home project as best I can; give them some work in organization of the home project, that is, of the subject matter for it, because I found it one of the weaknesses of the men doing this home project work. I give them some work on that and then we have four schools that are within easy enough distance so that we can get out there. I try

to have at least one or two trips to these schools to see the home projects in actual progress, in the fall and in the spring.

I give them some work in making charts such as they can use in the classroom work and in extension work. That I shall increase in amount as soon as I get my laboratory period. That is one reason I feel like increasing the time put in on some of this work without increasing the credit. Such work of that kind is largely mechanical after the chart has been planned and I feel in some subjects it is not worth credit on the basis of time put in. I want them to make collections of plant diseases, and insects, that they can use in their teaching work.

A thing I have just started this spring is a laboratory garden, as I call it. I believe every high school ought to have in connection with it a small laboratory garden. What I have in mind is a place where they will raise illustrative material for classroom work. It will be valuable for certain teaching work in the fall and spring of the year.

Question: How would you handle these gardens in the summer months, these high school gardens?

Professor Works: I want it small enough so that the agricultural man will take care of it. I am not expecting students to take care of it. The value to them will be the materials they have for classroom work.

I discuss laboratory equipment with them and text and reference books. Some experience in handling field trips and methods of presentation I have already touched upon. I think these are the main things. It is not entirely satisfactory, but it is the best I can see my way clear at the present time.

(On motion Messrs. Dennis, Maphis and French were appointed a Committee on Resolutions.)

The Chairman: Shall we turn to the next topic of the morning? "The proper preparation and equipment, academic and professional, of teachers in schools of agriculture," by Mr. Maphis, of Virginia.

Professor Maphis: Mr. Chairman and Gentlemen: I feel very considerable embarrassment in appearing before you this morning to discuss this topic. When requested to do so by Mr. Lane I protested, but he insisted upon my coming, and I think it but fair to state that I am not and never have been a teacher of agriculture, and that I come from a university which has no A. and M. college attached, and hence offers no work in agriculture. Occupying the Chair of Secondary Education, however, I am, of course, interested in the general problem of training teachers for secondary schools, and as Director of our Summer Session I have attempted to provide courses in agriculture and allied subjects which would in a measure meet the needs of the teachers in our State. I have also annually hold a Rural Life Conference at which the many problems of the country have been studied and discussed by eminent experts. I am also what our leading State paper calls an "academic farmer" and fruit grower. I mention this to show my interest in and sympathy with the special subjects with which you gentlemen are more directly connected, and to serve as some slight explanation why Mr. Lane should have selected me to discuss this topic.

I thought I had a pretty fair field until I looked at the topic of Professor Hart, just ahead of mine on the program. When one has answered the question, as he has so well done, "What shall be required in the course of study for teachers of secondary agriculture, in agricultural subjects, science, humanistic branches, professional training, farm experience and in specific work in special methods," he has pretty completely covered the ground and has discussed my topic as well. I am presuming that sec-

ondary schools are referred to in my subject and shall treat it accordingly.

May I refer briefly first to the need of properly, and I should say, better equipped teachers in this important subject. We have ten district agricultural high schools in Virginia, established, I believe, in 1908. They have not been so successful as we had hoped. There are doubtless many and various reasons for their lack of success, but, in my opinion, which I find to be the general opinion in my State, the chief reason is the want of completely equipped and thoroughly trained teachers of agriculture. The teachers of this subject have doubtless compared favorably on an average with those of other branches, but the subject is comparatively new in the curriculum. In the public mind, and amongst scholars as well, it is not yet accorded the same educational value as the other sciences and older subjects of the course of study. It must still overcome tradition, prejudice, and ignorance and win its place, as it will, among the elect. It must work out its own salvation.

For this reason teachers of unusual preparation and ability will be needed to win for it the popular favor and academic recognition it deserves. The work must be better organized and more scientific. It has been too loosely taught. The teacher must possess not only specialized knowledge, but broad scholarship, general culture, and all those intangible, indefinable qualities which go to make up personality and leadership. In the school and the community he must stand as the representative of general literary and scientific culture. A teacher of agriculture who lacks refinement of manners, ill-uses the Mother tongue, and is ignorant of or

indifferent to the usages of polite society, although he may possess abundant knowledge of his specialty, will not meet with wide success.

Through his superior knowledge of the subject, his wide general information, his liberal culture, his power and instinct as a scholar, his personality, his zeal and leadership, he must dignify his subject and command for it equal respect with any other subject of the curriculum. These teachers train that very large number of boys and girls who do not reach college but become the leaders and strength and support of the communities in which they live.

Of course some of these qualifications can not be acquired in the schools, but more than ever I believe the teacher is made and not born, and it is possible for the schools to impart these qualities in much larger measure than is commonly believed. I recognize the fact that there is a certain amount of native ability and adaptability which the school is not expected to provide, but without which no person can become a successful teacher no matter how extensive his training may be.

The experience of the German schools and the methods by which they have been made the most famous in the world, may not be without value to us, although the social and political ideals of the two nations are so different that it would be impossible, even if desirable, for us to adopt German means and methods. More than a hundred years ago under the leadership of Humboldt, Prussia began a broad and statesmanlike policy for providing adequate training for the teachers of her higher schools. Although a century of evolution has not brought about a unanimity either of opinion or practice, a few fundamental principles have been settled and

are universally accepted.

First. The candidate for a position as teacher in the secondary school must have completed his triennium at the university.

Second. He must pass a State examination in certain subjects in which every teacher should be reasonably proficient, and in certain other subjects of his own choosing, which he desires to teach.

Third. He must spend at least one year teaching on trial before he is officially admitted to the ranks of the professional teacher, and have his work criticised in the following respects:

- (a) Choice and arrangement of subject matter.
- (b) Manner of treatment.
- (c) Personality of the teacher.
- (d) Discipline.
- (e) Total impression and success of the lesson.

The schools are, as is everything else, highly specialized. Good teaching is the one thing required. All the changes which have taken place in their system show a tendency to make the conditions for certification more severe, more explicit, more pedagogical in their nature, and, on the whole, more conducive to the thorough professional training of the candidates. To an ever increasing degree, they emphasize the professional nature of the calling. Dr. John Franklin Brown, from whose book, "The Training of Teachers for Secondary Schools," after a careful study of the secondary schools of Germany, concludes: That the superior scholarship of the German teacher is the most important single factor in the excellence of German schools.

For the professional preparation of high school teachers in this country the report of the committee of seventeen is the most authoritative statement of opinion which has been made. While it is true that only a small percentage of our present high school teaching force in this country meets fully this standard, and a very large proportion scarcely approaches it, nevertheless it is some such standard as this that we should aim at, and the nearer we approach it the more we increase the efficiency of these special schools.

The following are the joint recommendations of the Committee of Seventeen on the professional preparation of high school teachers:

"The committee on the preparation of high school teachers recommend:

1. That the academic preparation include the following elements:

(a) A detailed and specialized study of the subjects to be taught. The program of studies selected by each student should include work in subjects outside of those in which he is making special preparation, sufficient to give some insight into the different fields of knowledge and to avoid the dangers of overspecialization.

(b) One or more subjects from a group including history, economics, and sociology, which will give the teacher a proper outlook upon the social aspects of education.

(c) A course in general psychology and at least one from a group of subjects including history of philosophy, logic, and ethics, which will give the teacher a proper outlook upon education as the development of the individual.

II. That definite study be given to each of the following subjects, either in separate courses or in such combinations as convenience or necessity demands:

(A) History of education.

1. History of general education.

2. History of secondary education.

(B) Educational psychology with emphasis on adolescence.

(C) The principles of education, including the study of educational aims, values, and processes. Courses in general method are included under this heading.

(D) Special methods in the secondary school subjects that the student expects to teach.

(E) Organization and management of schools and school systems.

(F) School hygiene.

III. That opportunity for observation and practice teaching with secondary pupils be given.

The committee recognizes the difficulties involved in this recommendation, but believes that they are not insurmountable.

(A) The maintenance of a school of secondary school grade that may be used for observation and practice.

IV. That the minimum requirements for a secondary school teacher be graduation from a college maintaining a four-year course and requiring four years' high school work for admission or from an institution having equivalent requirements for admission and giving equivalent academic scholarship.

A year of graduate work divided between academic and professional subjects is desirable.

V. That the study of subjects mentioned under II be distributed through the last two years of the college course.

The proportional amount of time given to these subjects will vary with local conditions, but an irreducible minimum is one-eighth of the college course. They should be preceded or accompanied by the subjects mentioned in I, B, C.

In the training of the high school teacher there are four factors to be considered: (1) The length of the training period; (2) general academic training, (3) theoretical professional training, and (4) practical professional training."

The foregoing is the historical background, and I think truly sets forth the commonly accepted standards, principles and practices, or certainly the idealism, in teacher training for secondary schools. Every standardizing agency, every association of colleges and secondary schools, every progressive State Department of Education, accepts them, and either has reached them or is striving to do so.

It is true that the charge is preferred that these standards are college-made and the result of college domination and traditional ideas of scholarship; that the colleges define the entrance requirements and insist that only their graduates shall teach in the high schools and thus maintain a self-perpetuating system, etc.

It is, therefore, the duty of this conference to inquire and try to decide how far the teachers of this new and specialized branch of

science shall conform to these standards. Being frankly vocational, and, at the same time, laying claim to recognition as a science, is there about it some magic short road to success, some open sesame of method which will at our bidding throw open the doors to this special temple of knowledge and permit us to partake freely and fully?

Will specialized knowledge and special methods be sufficient equipment for the proper teaching of this new claimant for equal recognition in our high school curriculum, when the standards of professional preparation in all other subjects are being raised? When law, medicine, engineering, theology, and all the lesser professions are increasing their requirements and lengthening the period of preparation, can the preparation of teachers of agriculture be maintained on a lower basis and the dignity and efficiency of the work be preserved?

The question is probably more one of time than of content. As the lawyers say, "Time is the essence of this contract," and if we resort to short courses and delimit the content, the character and standard of work must necessarily suffer.

High order of efficiency in teachers rather than the nature of the curriculum imparts distinction to any school and it is this quality in the teacher toward which we should aim. Consummate knowledge and skill in the teacher are imperatively the backbone of any system of secondary education.

It would seem that the colleges are recognizing this fact. Mr. Dick J. Crosby reports that in 1908 twenty-two land-grant colleges offered either special education courses for teachers of agriculture, or prescribed four years courses for teachers of agriculture.

The Graduate School of Agriculture, inaugurated at the Ohio State University in 1902, is a recognition of the principles which I have laid down. There is a further recognition in the fact that at least forty-one colleges provide agricultural work leading to the master's degree and ten are offering courses leading to the doctor's degree.

Mr. Edward A. Rumley, of La Porte, Ind., in a very thoughtful and forceful address, "Some Thoughts on Agricultural Education," has this to say:

"Better State universities, agricultural colleges, high schools, extension work, experimental and demonstration farms, educational pamphlets, are all useful and much needed institutions or devices, but alone they will not suffice. For this new work that we are asking the schools to undertake, we need teachers especially prepared by years of training. Already the demand is so great that there are twenty places open for every competent teacher.

Much experimental effort will be required to find the right forms of teaching, all of which it will be hardly possible for a school controlled by the State or other political body to undertake. Some large institutions, practically managed by those who understand and sympathize with this new ideal of education should be created. New courses of study must be worked out in normal schools that give a combination of practical knowledge and broad experience necessary for this new work."

My own opinion is that institutions already existing can and should undertake this work and do just what Mr. Rumley thinks the private foundations should attempt. He rightly says that "teachers consciously

prepared for this new work by years of special training are our most urgent present need."

In accordance with this standard, therefore, I contend and believe that the academic training of teachers in secondary schools of agriculture should not be less than four years of standard college work. I would not undertake to specify the subjects which should be included in this four years of work, except that the group system should prevail and the student should study somewhat extensively several allied groups of subjects with that of agriculture. Under no circumstances should English be neglected and a sufficient number of other courses of general culture should be pursued. The theoretical professional training and the practical professional training should not be less than specified and in addition at least a year in practical experience on a farm should be insisted upon just as rigidly as clinical work is required of young doctors.

* "The teacher in a secondary school of agriculture or any other vocational subject should not be a narrow specialist, absorbed in his own subject, and indifferent and inexperienced along every other line. The one-subject teacher is not the eminent success our efforts led us to believe he would be. His range of interests is limited; he can not judiciously distribute the emphasis among the several topics of the curriculum. His very intensity narrows his own vision and operates against the broadening of sympathies and interests and that all-round human interest which is the best preparation for life.

* See Sachs - "Secondary Schools."

Goethe's "Wer nur eine Sprache Kennt, Kennt Keine," applies in principle forcibly to any one-subject teacher.

"Few high schools are large enough and have sufficient teaching force to employ specialists."

The following statement which I made before the National Commission on Vocational Education in regard to vocational training in general, I think applies to the subject under discussion:

1. Teacher training is fundamental to the success of any plan or system of education, and, therefore, should form an essential part of any general scheme for vocational training.

The greatest defect in our present educational system in the several States is a lack of trained teachers, not only in the elementary schools but in the secondary schools, and even in our colleges. So pressing and well recognized is this need that normal training in high schools is being rapidly provided and yet a large majority of our teachers in the elementary schools remain untrained. To meet the fast growing demand for trained administrative officers and teachers in the secondary schools departments of education have in recent years been established at every State university and in many private colleges and universities. There has never been a time in the history of education in our country when the trained schoolman or woman was in so great demand and salaries as large as now, although there is a greater percentage of trained school people than ever before. Probably the most marvelous growth which any educational institution has had has been that of Teachers College, New York, notwithstanding the fact that almost every other institution of note has added a teacher-training department.

If, therefore, the value of and need for teacher-training are so clearly seen in order to obtain efficiency in the older types of education, it is manifest that it is even more important that the newer types of schools should be directed by teachers trained for their work. Otherwise loss of effort, as well as opportunity, will result and much waste and injury occur.

Recent experience with new types of vocational schools verifies the truth of this statement.

In recent years an attempt has been made throughout the South and in parts of the West to establish agricultural high schools in which the principal vocational subjects to be taught are agriculture and the domestic arts. Although only a small number of such schools have been established in each State, comparatively few of them have succeeded and the reason almost uniformly given for their failure is a want of trained teachers to direct them.

A few years ago farm demonstration work was undertaken throughout the South under the leadership and direction of Dr. Seaman A. Knapp. It met with remarkable success, and is still being conducted with success, but the greatest handicap to a much greater progress is a lack of trained men for the work. When it was first begun successful farmers with good experience were usually chosen for demonstrators, but in a year or two they had used up all the empirical knowledge they possessed, those whom they instructed had caught up with them and, lacking the broader scientific knowledge of matter and method, their success was not continuous. Trained men is the greatest need of the demonstration work.

These instances, it seems to me, show the necessity for trained teachers in any new type of school proposed.

2. Teacher training involves (1) broad academic knowledge as a basis, (2) leadership, which is partly at least acquired through such scholarship, (3) professional knowledge; a knowledge of underlying principles of education from the psychological, biological, and sociological viewpoint, and (4) specialized knowledge of the particular subject to be taught.

In making these statements I am well aware that it will not be possible or necessary to have every teacher in a system of agricultural schools a trained teacher any more than it is possible to have every teacher in our public schools a trained one. What I do contend for, however, is that at least the head of each such school should be specially and professionally trained, and as many more of the teachers as possible shall have some degree of professional training. Neither do I contend that every teacher in such school shall be a college graduate, or shall be trained in a college. That will depend entirely on the character, type, and grade of school.

I do contend, however, that the principles of a broader training set forth in these sub-headings should be taken into account, for we must not lose sight of the fact that in this country in which universal education is the bed rock principle on which the stability of our democratic government depends, the chief aim of all education should be the preparation for citizenship, and, as some one has said, "We should prepare the child not alone to make a living but to live." The possession

of mere technical knowledge and mechanical skill, however they may incite our admiration, or add to the earning power, is not broad enough for American citizenship.

It can not be denied that the largest percentage of the leadership in this country comes from among those who have had the broadest training.

It should be remembered also that the heads of these schools will be confronted with the same pedagogical problems and questions of administration as the principals of any other types of schools. They will have adolescent boys and girls to deal with. They will need to know the same health problems, the same social problems, largely the same administrative problems. In other words, the underlying principles of educational theory and practice will be practically the same as for the usual type of school.

A mere specialized knowledge of a particular vocation, and expert skill in its practice will not be sufficient. If we assume that only the heads of such schools can or should be trained in this broader fashion, we shall have to give to teacher training a prominent part in a general plan for vocational training.

3. This teacher training should be done as far as possible in institutions already established for teacher training.

There is needless duplication of effort with consequent waste in the multiplication of institutions of learning. Every State-supported school, whether of secondary or higher grade, should as nearly as possible, render such service to the State as the peculiar educational, social,

and economic needs of the community in which it is located demand.

Teacher training involves much more than an empirical knowledge of a special vocation, and hence this work should be done, as far as practicable, in connection with institutions already established for this purpose; such institutions modifying their courses if necessary, or creating new ones to meet this special demand.

To sum up briefly then, I conclude that the training of teachers of agriculture for secondary schools should not differ materially in quantity or quality from that which is required by our best standards for secondary teachers in any other subject. In kind it should be somewhat differentiated, of course, but in its relative proportion of academic, pedagogic, or theoretical, and practical professional training it should conform to these standards.

The report of the committee of the National Education Association on course of study in agriculture gives the two following needs:

1. A readjustment of elementary science teaching and courses of study in science.
2. An organized correlation of agricultural topics with the other branches of study.

These needs can not be met by teachers with limited training and narrow scholarship.

Some one has said "it is the business of secondary education to raise all subjects which it touches to the plane of science." To be made scientific, agriculture must utilize and be closely correlated with the physical and biological sciences, especially botany and chemistry; and

to meet the ends of education in the State and community it must be closely correlated with the social sciences. Purposeless science has no place in the high school. Even the modern science of education is written in terms of biology and evolution.

Community service belongs to the entire field of science and agriculture and is a combination of practical sociology and practical science.

Therefore, this is preeminently a subject in which for the teacher, "little learning is a dangerous thing," and my injunction is that the secondary teacher of agriculture "drink deep at the Pierian Spring."

Professor Metzger: Mr. Chairman, and gentlemen of the conference: It is quite evident to the men in our agricultural colleges and State departments of public instruction who are charged with the responsibility of preparing teachers for and supervising the teaching in our schools of agriculture, that these men need a preparation which differs largely from the preparation required by those in other departments of the public school work. This fact has come to light mainly through the attempts in both Europe and America to recruit the teaching force in vocational schools from people trained along purely academic lines. The failures have been due to the fact that the teachers lacked concrete and practical experience in the vocations in which they were giving instruction, and in a general way were out of touch with the requirements of the particular productive industry. On the other hand, not all of the men who have had the requisite amount of technical instruction and practical experience have made efficient teachers of school agriculture.

If one were to classify the teachers who have been engaged in the agricultural work in the schools of the United States, they would fall under the following rather general divisions: Teachers who have had a general science training and have shown some aptitude in the application of it to the more evident things of life; the teacher who has had a liberal arts training and whose only preparation for the special work is that of farm experience; the teacher who has had a normal school training which included courses in elementary agriculture; and the teacher who has had a technical agricultural education and has shown some teaching ability.

It is not the purpose of this discussion to consider the merits or the shortcomings of these varied classes of preparation for the work in the schools of agriculture. I desire, however, to enter a protest against the common notion which exists among so many school officials that on account of the school being located in a community in which some special agricultural industry predominates the teacher must be one who has had a technical training in this particular industry. My observation has been that the highly specialized man is inclined to over-emphasize his specialty, to be too technical in his instruction for the high school student, and frequently just as deficient in his general agricultural knowledge as the man who has had another form of preparation.

I have made some little investigation in Maryland along the lines which Professor Works did in Minnesota, and I find exactly the same thing true. Men in localities in which there is not a single commercial orchard, and we have some localities where orcharding is quite prominent in Maryland, are giving more time to the spraying and pruning of trees

and packing of apples than they are to the dairy industry, which is the most prominent thing there, and it so happens in the two institutions I am thinking of now that these men are horticultural department graduates. I believe, and this is based largely on observation, that the specialist may be just as deficient in general agricultural knowledge as the man who has had a purely liberal arts training and has had farm experience. What seems to me then we ought to have is a man who has had a general agricultural education. We are fortunate in our college in the freshman year to have these general courses. Our students receive a general course before they receive any special course. Our present course of study requires, I mean in the department of agricultural education, that the students take all of the general courses and such other of the special technical courses as can be arranged.

What is needed is a teacher who has had a general agricultural education, reinforced by a thorough training in the allied sciences, in languages, pedagogy, and the art of teaching. It seems that such a teacher would lay a broad foundation for the students of the high school; he would avoid trying to make specialists of them, and what is more important, he will keep the subject in its proper relation to other subjects of the high school course. If he is an ambitious and an energetic individual, (and most school authorities do not want him if he is not), he will in due time become sufficiently allied to and informed in the local agricultural industries as to be of special service to the community to which he is assigned.

I know for a fact that when I was employed for a high school in Minnesota, they wanted a man who was particularly strong in dairying, and my training in dairying was rather limited. I was hired because I had done some advanced study in the legal side of dairy chemistry and they thought that would fit me for the dairy work in the locality. When I got into the locality I did not overlook the fact that they wanted that special work done, but I set to prepare myself to do it and of all people I detest are the teachers who go out into the schools or the college graduates who go out and stop growing. It seems to me it ought to be the place where they should begin to grow rather than stop growing. I will not take your time to go into that further.

It may be argued that if the course of study is prescribed there will be no occasion for the teacher to fall into these errors. In most instances the high school courses of study in agriculture permit of a great deal of latitude, and in every instance the teacher's interpretation of the course is of greater consequence than the outline presented to him.

It is important that the agricultural teacher possess a large amount of general cultural training. This is essential not only on account of his position in the educational scheme of the school system, but on account of his coming in contact with people who have a liberal education. His course must make him efficient in the use of the English language; he should be proficient in at least one foreign language; he should be master of all the mathematics ordinarily taught in the secondary schools;

and he should have a working knowledge of political and industrial history, civics, economics, and logic. All told these courses may well occupy thirty-three per cent of his scholastic time in college.

Usually the general sciences are classified under the academic preparation of the student, but in the agricultural colleges these courses permit of an adaptation that will permit a special classification. For example, after the principles are mastered the student may well make the applications in chemistry, botany, physics, entomology, and bacteriology in things agricultural and thus add to his general preparation for teaching agriculture in the schools. As a minimum part of his collegiate training in the sciences, I would say at least twenty-two per cent of his time should be devoted to this class of work.

Since the present tendency is to employ men for the schools who have had a technical agricultural education, it is important to note their special preparation and fitness for the work. The prospective teacher may be filled with things to do, but be absolutely ignorant of when or how to do them. Such a teacher is fortunate if he is under an efficient and sympathetic superintendent, but two difficulties are likely to arise, the teacher is not always responsive in this respect, and the superintendents are not always willing to train teachers after they have been employed. At present at least our teachers of agriculture are judged and graded largely by the standards set for academic teachers, and it is essential that the future teachers have a professional training that will enable them to measure up to the standard.

The agricultural teacher, then, must have courses that will acquaint him with the development of the child mind, the development of educational systems, the principles of education, and the organization of materials of instruction into teachable form. His collegiate training should include general courses in psychology, history of education, and principles of education. In addition he should have special courses in the art of teaching in which the adaptations are agricultural, courses which pertain to the organization of the special work in secondary schools, and in courses which pertain to the general community activities and its institutions. It seems that at least ten per cent of his collegiate training should be of a professional character.

The Chairman: We will now adjourn for luncheon, to meet promptly at two o'clock this afternoon.

A F T E R N O O N S E S S I O N .

The Chairman: The first topic on the program for this afternoon is, "Most valuable lines of agriculture to be pursued in secondary schools and to what extent should they extend?" by Prof. F. B. Jenks, of Vermont.

Professor Jenks: Mr. Chairman, and gentlemen of the conference: I take it for granted that we all recognize the fact that the lines of agriculture to be pursued and the extent to which they will extend will depend upon several things, namely, the kind of school, the location of the school, and the kind of course, but I am going to mention some of these things just as though you did not know them already in order to get a basis for discussion.

As to the kind of school, of course, we have the special agricultural high school, and the general high school, which may be either one of two or three types, and the normal school--all of secondary grade. The location of the school has a great deal to do with it, if it is a rural agricultural school or if it is a town high school in a rural or village community, or whether it is a city high school. In the city the school may be a high school with a large percentage of rural pupils or no rural pupils to speak of. I am going to make a suggestion which I am sure does not meet with the ideas of a great many people. I do not know how many of you will agree. The more I study the situation the more I am convinced it is a desirable thing in many cases. That is, whatever the school may be, the location, the type of school, or the length of course, that there should be a general course in agriculture the first year. That the first year in the course should be a course dealing with the whole field of agriculture. I would cover practically the whole field the first year; no matter where it is and what kind of school it is. I know there will be criticism as to that. I am going to give you some of the reasons for it. One of the objections I have often heard is that it requires so much repetition if you give a general course. Suppose you have had some soils, some crops, etc., if it is given properly in the first year you can build upon that in the second year. I am going to give my reasons for a general course in agriculture. It provides a basis for the future work; it will secure the interest of more pupils; it helps the student to find himself; it induces more students to continue the course; and it takes care of those who drop out by giving them the very best possible course in the limited time they are in the school.

To go into these points a little more in detail. The high school boy on entering the high school, no matter what kind of a high school it is, meets different types of training than he has had before. It is new to him. If he starts in a special course of agriculture it may not appeal to him at all. For instance, a course in soils, as is often given the first year, does not appeal to the boy at first because he is interested particularly in animals, for instance, and he thinks that because that soil course to him is a dry course the whole subject of agriculture would be uninteresting, and if that is the kind of thing he is going to get he prefers to drop out of school. He does not, perhaps, have much of an idea of the whole field and he does not know what he wants to do nor how he wants to do it. For the same reason I would have a general course in all these subjects in the university or college. I would have this first year's work in any kind of a school a general course. Having made that statement I want to qualify it just a little bit in this way. That, if it is only a one-year course, the time allowed to the various subjects vitally emphasized will vary according to conditions very largely, but it seems to me that when a boy comes into the high school, if he only takes agriculture one year, he ought to have a general idea of the whole field of agriculture. It does not mean you will take up any subject in very great detail. He may take up some subjects with some detail if it is only a one-year course, but it does not seem to me it is quite worth while and I might say we are trying it out in the schools of Vermont. We have now six high schools giving that general course in agriculture the first year and then they are starting in the second year with farm

crops and soils, and the third year animal husbandry and horticulture, and the fourth year of farm management, farm crops, rural sociology, etc.

I believe with the proper textbook and the proper man handling the course a satisfactory piece of work can be done in the eighth grade in giving the general course in agriculture.

I thought in speaking of Vermont conditions I would have to consider the six and six plan according to the educational bill which emphasizes that strongly. While I know it is advisable in many ways it has hardly reached the point where we can discuss it generally, and I have considered this on the plan of the four year high school.

The Chairman: Is your formal work in agriculture preceded by work in nature or nature study?

Professor Jenks: It is and it is not. Some schools do give nature study work. A great many of them do not. Personally, I favor a course in nature study or agriculture through the grades, but at the present time in Vermont we have comparatively little done in the grades that could be classified as nature study work and still less as agriculture. The teachers in the rural schools are seldom normal graduates. A few of them are high school graduates, but many of them have only an ordinary high school training, some not even that, and they are not prepared to teach nature study, at least the most of them are not.

Upon this year of general work in agriculture, which would help the pupil to get a start, and I think I will make myself a little bit clearer if I state it in another way, I feel very strongly that our agricultural courses ought to be so organized and so conducted as to

get more boys to stay in high school rather than to get a few boys who are better trained. My idea is not to take a few to further study giving them better training, but to get more boys to stay in the high school, so my opinion is if you have only one year of agriculture to put it in the freshman year rather than in the senior year. Of course, you can teach it better in the upper grades, but since our purpose is to get hold of as many as possible and get them interested, we had better have it in the freshman year and that is the main reason I would make this course a general course so they will have something to build upon. Suppose you give a course in animal husbandry or in soils or in crops, some of them will take it all right and see the possibilities and go on with it, but they will be blind to certain phases of agriculture, and the one which it does not strike will not be encouraged to go on. Now, those who do not go on have not had the best course possible.

Mr. Dennis: Will that argument hold true just as strongly after the agricultural courses have been in operation three or four years and they can see the work that is being done in the other classes; that is, so far as their not being able to see what is in store for them?

Professor Jenks: I think it will still hold true in a very large degree. While they will observe a certain amount they have no possible way of getting the viewpoint from what they observe in the class, unless the class is held in a room where the freshmen could listen to the recitation. There is one teacher in Vermont giving a course in domestic science and in agriculture in such a way and she says that the other pupils will not study, the girls will not study when she is having agriculture and the boys will not study when the girls are having domestic

science. They ask questions and they are interested. You know, of course the woman makes it interesting. She is the wife of a farmer and has taught seven years. Anything she talked about would be interesting. It is a small high school, only two years of high school work. These freshmen get just as much as the sophomores do out of it.

I want to make clear that if the courses are so given that the years after are going to be a repetition and a waste of time that it is a bad thing. If this general course is so arranged that it is simply a beginning it might not be worth while. But there are certain things a boy ought to know about crops before going far in animal husbandry. He has to know something about soil before studying crops. The second year I would suggest farm crops and soils. Farm crops particularly because plant growth is the center of all farm activities. We only study the soil in relation to plants. I think soils is very often taught from a wrong standpoint. We sometimes forget that the soil is simply the home of the plant and that the only use we have for it is as the home and a feeder of plants. I like to take those two subjects together, and I like the course which has farm crops and soils through the entire year rather than one-half year of each, because, as you all know, there are some things that can be taught indoors and some things that can not be taught indoors at all.

Professor Hart: You are running the soils and crops through the year. Where do the animals and fruit and dairy work and forestry and floriculture come in?

Professor Jenks: They are coming. The freshman year is a general course. It gives a general insight to the whole field of agriculture taking up the different phases.

Professor Hart: Will the first year cover mechanics, farm carpentry?

Professor Jenks: I would have a course in manual training or farm mechanics if I could get it in there.

Professor Hart: Will it be a part of the general course?

Professor Jenks: That would all depend upon the teacher and the time. I favor a course in farm mechanics, but the point is right here. Work in carpentry and forge work and things of that kind could not be a part of the general course in agriculture because they would need at least one hour or two hours a week for the entire year to get very far in their special work. You might run it parallel but hardly as a part of it.

Professor Hart: Crops you admit as part of the general course. Would you involve fruit crops as well as corn and potatoes?

Professor Jenks: In a general way.

Professor Hart: Flowers.

Professor Jenks: In a general way. A general course would include all crops grown on the farm. In Vermont forestry is one of the main crops. Forestry culture will be introduced the first year. In the reorganization of the agricultural college course we put in a course in forestry. In Vermont forestry is a very important thing and it is a part of the farm crops. It is not, as in some States, a section of forests and another section of farming country. Every farmer has his woodlot and it

is a part of the farm management problem. Farm management men insist we can not teach farm management and leave the forest crop out in Vermont.

Professor Hart: Have you gotten it figured out that you know about the percentage of time or any other way of dividing this material of the first year between these different things? When you are studying crops I take it you will bring in the fruits of various sorts and flowers and forestry and mechanic arts. Have you gone far enough to analyze it?

Professor Jenks: So far we have not gotten it worked out on a percentage basis, but we are considering it. In Vermont dairying is the principal industry, so we give a larger amount of time to dairying than anything else. When it comes to farm crops we want a general idea of farm crops, but we will spend most of our time in farm crops on hay, corn, clover, potatoes and oats. They are the main things which are grown in the State of Vermont. In the matter of horticulture, of course, apples are the main thing. A course is given in pomology, including pruning and spraying. I want to give you an illustration. Last fall we started in Brandon with a high school course in agriculture. We had one senior who heard there was a vacancy in the department of science in that institution and he went to see the school board and they had not thought of teaching agriculture. He said, "Why do you not teach agriculture down here," and he told them how it could be done and before he left he was hired at \$900 a year to teach agriculture and science. At my suggestion he started in this fall with a general course in agriculture for the first year. If he had taken up the subject most interesting, I suppose it would have been dairying. In the fall he went out on the

farms and taught the boys to prune apple trees and some of the farmers heard about it and the next Monday afternoon another farmer came in and took the class out and they pruned his orchard and so on for several Mondays. He has those fellows started. The farmers are interested in it. I do not believe it would be possible with any one special course to get the farmers so interested. That is the one thing needed first, to get the interest of the boy and the farmer. He has those farmers interested. He started at the time of the year when it was most advisable to prune apple trees and got the farmers interested. Next year he will have another course. The boys then will see a reason to take that course. Next year they will probably study dairying.

Professor Hart: You may add among the values of the general course its flexibility? You can begin anywhere?

Professor Jenks: Yes. One or two cases will illustrate. A poultry show was going to be in the town and with the general course in agriculture they took up poultry before the show.

Professor Bricker: What objection would you have taking for your general course a textbook and supplementing it according to some things you want emphasized?

Professor Jenks: That is what I am recommending. Personally I have recommended Warren's as being the best suited to our conditions. I think it is not only a good thing to use a textbook but it is a bad thing to get clear away from a textbook, at least for the average teacher. The textbook ought to be flexible (or the man ought to be.)

Professor Works: I think shop work and poultry create more interest in the general course of agriculture than anything else to arouse interest.

Professor Jenks: We all talk from local conditions. At the present time we have no real course in poultry at the agricultural college. There is not a man teaching agriculture in a school in Vermont, with one exception, who is capable of handling poultry at all. We are trying to get the boys and girls in club work to take up poultry but I think even there it will depend largely upon the man. If you have the right kind of a man in manual training you will get interest but I must say a number of the courses I have seen in manual training did not amount to much. I have gone into the schools where there was a course in agriculture and found them making pen holders and tie racks and did not have the faintest idea of how to make a gate or a brooder or anything of that kind.

Professor French: The trouble was you had a teacher of manual training and not a teacher of agriculture. He had learned it at the normal school or somewhere.

Professor Jenks: There again we have had to go outside of the State in order to get teachers capable of handling work in that line. Our new course provides for a course in carpentry and in forge work. Later on we expect to have men who can do these things. I have three boys now taking a special course who have gone into the engineering department and taken the carpentry and the forging and the teacher there has been kind enough to help them out by varying their work a little bit and making it more along the lines of agricultural training, but they

are only three out of fourteen. Only three will be at all prepared to handle manual training.

Professor Metzger: Do not you think it better to have soils and horticulture instead of soils and farm crops.

Professor Jenks: I include under farm crops, in that general term, all the crops of the farm and in a city I would give more time to that sort of thing. In fact, this would all have to be varied to suit the location. In one city it would be one thing and in another it would be another. If the pupils are mostly city pupils I should make it very broad and designed to give general information. I do not like to use the word but I would give it in a sense as a "cultural" subject rather than a vocational subject. I should not emphasize any particular thing from a vocational standpoint in a city school. However, as I find sometimes, if in the city there are a large number of country pupils that would be a different proposition.

I think there is another reason that has not been mentioned before. In starting with the plant, because it is a little bit easier to begin with, the experience of the high school boy puts him in a position to take up the study of plants easier than anything else. In many of the courses botany comes in the freshman year and they are better equipped for that. The third year I suggest animal husbandry and, of course, under that there are four general headings; types and breeds, feeds and feeding, stock breeding, and dairying. Now, as to the division between these different subjects, or the extent to which they are to be studied, I should leave that as a local problem. I do not believe any school

ought to ignore any one of them. Certainly they should not be emphasized to the same extent. We had a man come from an agricultural college, into Vermont, who did not actually know what a Babcock test really meant or how to conduct it. I do not think that is right. I do not think he ought to be allowed to graduate from an agricultural college without knowing something about every phase of agriculture. One thing we insist upon and get in the Vermont Agricultural College is that by the time a student has gone through the sophomore year he has had one fundamental course in every department of agriculture in the institution. He has one course in dairying, one in forestry, one in animal husbandry, one in agronomy, one in poultry, and so on. He has to take one course in everything and then he can elect afterwards.

I have not suggested the extent or the amount of time that should be given. As to horticulture, vegetable gardening, and fruit growing, we feel that in Vermont every boy who goes out ought to know something about pruning and spraying. We do not think it worth while to give a whole year to it but in some sections where commercial orcharding is the principal thing we are insisting that the large part of the horticultural work be along the lines of pomology. We think also that every boy going through high school ought to know something about vegetable gardening, that is the ordinary family garden. He ought to know how to handle a hot-bed and a cold frame, and do the ordinary work. So far as market gardening is concerned, I do not think it worth while in Vermont. We do not consider that at all. In some sections the emphasis should be placed there.

In the last year farm accounts and farm management. I always hesitate in recommending or in talking very much about farm management in the high school, also rural economics and sociology. We have not the teacher or the place to prepare them if we had them willing to take it. The colleges of agriculture have not yet gotten their courses in farm management well organized. When they say what book would you recommend I do not know of any. I know some fairly good for college work with some little supplement and change.

When it comes to rural economics and sociology, it is still more of a problem. Where can you get the material. How can the teacher of agriculture prepare himself to teach these subjects? There are few places he can prepare himself just now. I hesitate, and yet, I think they ought to be in the last year of high school work because our rural problem divides itself into two phases--economic and sociological. I believe that the boy who goes out to teach agriculture in the secondary school must have a vision of what a rural community ought to be. I do not know of anything that will give him this better than a good course in economics and sociology. I am not going to suggest to what extent it should be gone into, but I believe we ought to work towards that as an ideal so that in time we can at least spend one-half year profitably on farm accounts and farm management and another one-half year on rural economics and sociology, and then I would hope it would not be long before we could spend a full year on each of the two. As to the extent to which these various subjects may go it depends. I think we ought to have in mind the school which will do the most for the farm boy in the time he has to devote to the subject. It may be a one-year course, it may be two, three,

or four. We are recommending in some cases a one-year course, in some places a four-year course. We are saying that the whole subject ought to be covered as completely as it can be with the emphasis placed upon the things which affect most vitally the community in which the school is located. That is about as far as we have gotten as yet. I do not know how we can figure out the exact per cent or the amount of time devoted to each subject. We are, in training the boys going out to teach, taking up this matter. In fact, we have a score card we are applying to textbooks and material for teaching agriculture in the secondary schools in which we have divided the field up into different phases and given a value to it so the boy will have some idea.

We take up the matter of the importance of a subject and try to work out in a general way some idea as to which subject ought to be given the most time in Vermont. We have not attempted as yet to say that you should teach dairying so many hours, or that you should begin with dairying, or end your course with dairying. We have not gotten to that point.

It seems to me there are certain general points we can all agree upon, as to the relative merits and we will have to leave the individual subjects to the local community to be solved according to the local conditions. I think this is all I have to say.

The Chairman: Mr. Dennis has the floor at this time in opening the discussion.

Mr. Dennis: I think on account of the fact that the afternoon is well along and that there is another topic to be discussed the most

practical thing I can do is to give you a few fundamental principles governing our work in Pennsylvania along the line which has been discussed.

In the first place, we feel that in introducing agricultural education into the public schools of Pennsylvania our main purpose is not the development of agriculture. We think our chief business is to give the boy the kind of a training he ought to have. We feel it is the boy and not agriculture that is the controlling factor in any courses of study we may arrange or in any work that we may give him. That thought has governed us in the course of study we have planned.

We believe that an agricultural course incorporated into a high school ought to be general rather than special. We put in a broad general agricultural course. About the same amount of time is allotted to the different agricultural subjects regardless of what county they are taught in, although we do believe there should be some slight modification of the general course in order to give a little more time to the subject which is of the most importance to the community in which the school is located. In a dairy county we give a little more attention to dairying. In our short courses we give a little more attention to dairying in such communities. The fact of the matter is, in our farmers' night courses we give what the farmers want. They will come in the first night at the call of the supervisor of agriculture. They are asked how often they would like to meet. If they say once a week we make it once a week. They choose the subjects for discussion. The needs of the community influence the night school work and the short course work more than our regular work.

Our vocational work is practically on the basis that forty or fifty per cent of the pupil's time must be spent in the study of practical subjects. The other half of his time must be occupied in the study of academic subjects. We will not allow any student taking the four-year course in agriculture to take less than two academic subjects, one of which is English. The boy, the supervisor of agriculture, and the boy's parents choose the other subject. That is a minimum requirement. We recommend that at least three academic subjects should be carried by all students who have the ability to carry them.

Professor Jenks: Do you think it advisable, if you have enough boys who want the work and enough help in the agricultural department, to have short courses for the academic students?

Mr. Dennis: Yes. The question arises, however, suppose we do that generally, will it lead to the breaking down of a four-year course in agriculture and leave just the sampling of a course.

Professor Hart: Do you require about one-half time?

Mr. Dennis: Yes. When we began we started with five schools in three different counties. This year we have twelve. We have enough applications now that have come in during January and February to have these schools in operation in thirty counties. We are going to start as many as we have qualified men for.

The Chairman: We are to meet at seven o'clock. We now adjourn to go to the Ohio State University. Professor Bricker will be in charge.

(Adjourned at 3.30 p.m.).

The first thing I noticed when I stepped out of the car was the cold. It was a sharp, biting cold that seemed to penetrate my coat. I shivered as I walked towards the building, my hands tucked into my pockets. The air was thick with the scent of old stone and the distant hum of city traffic. I took a deep breath, trying to steady myself as I entered the grand, arched doorway. The interior was vast and dimly lit, with high ceilings and walls covered in intricate carvings. A large, ornate chandelier hung from the center of the ceiling, casting a warm, golden glow. I walked through a series of hallways, each more impressive than the last. The floors were made of polished marble, reflecting the light in a way that made me feel like I was walking on a mirror. The walls were covered in tapestries and paintings, each telling a story of its own. I stopped for a moment to look at a large portrait of a man in a red robe, his face stern and commanding. I felt a sense of awe and wonder as I continued to explore the building. The architecture was a masterpiece of craftsmanship, with every detail carefully carved and painted. I walked through a series of rooms, each with its own unique character. There were grand ballrooms with high ceilings and chandeliers, and there were quiet study rooms with bookshelves filled with old books. I felt like I was stepping back in time, experiencing a world that had been forgotten. The air was thick with the scent of old paper and the sound of my footsteps on the marble floors. I walked through a series of hallways, each more impressive than the last. The floors were made of polished marble, reflecting the light in a way that made me feel like I was walking on a mirror. The walls were covered in tapestries and paintings, each telling a story of its own. I stopped for a moment to look at a large portrait of a man in a red robe, his face stern and commanding. I felt a sense of awe and wonder as I continued to explore the building. The architecture was a masterpiece of craftsmanship, with every detail carefully carved and painted. I walked through a series of rooms, each with its own unique character. There were grand ballrooms with high ceilings and chandeliers, and there were quiet study rooms with bookshelves filled with old books. I felt like I was stepping back in time, experiencing a world that had been forgotten. The air was thick with the scent of old paper and the sound of my footsteps on the marble floors.

EVENING SESSION.

The Chairman: The first topic is "Methods and agencies in teaching agriculture in the secondary school," by Prof. Geo. H. Whitcher, of New Hampshire.

Professor Whitcher: I realize I will be traveling over the same ground that other speakers have been over and that the similarity of topics discussed has resulted in getting things pretty well threshed out during the day.

Dr. G. Stanley Hall in one of his chapters on The Motor Aspect of Education says: "I would lay it down as a law of universal application that in every course of manipulation, no matter how practical and laborious, three-quarters of the appeal should be to the interest and intelligence of the child, which is far in advance of, and growing far more rapidly than his manual power during the few years that just precede and follow pubescence."

This statement sums up the many reasons for rejecting, in all practical arts education, processes and projects that smother interest and intelligence beneath a mass of manipulatory activities that are initiated and controlled through the lower nerve center, that is, activities that have become habituated. Facility, skill, economic efficiency, all are antagonistic to education, in its adjustment phases, at all ages below seventeen because skill in motor expression always means automatization, which in turn invariably means the short-circuiting of the so-called higher human nerve mechanism. Skill and productive efficiency are directly proportional to training, with its many repetitions of

precise exact movements, and inversely proportional to adjustment.

This means that for maximum power of production, definite, oft-repeated, non-intellectual movements along narrow lines and under reflex and habituated control, are a necessity, while for adjustment in its educational aspect, numerous and varied stimuli must flow inward from a great variety of situations to the end that the greatest number of cortex cells may become organized through sensory stimulation and the accompanying blood flushings and consequent nutrition.

The domination of habit means the arrest of development because habituated activities do not energize and nourish the cortex.

During the years from puberty to seventeen or eighteen, motor response must remain under direct cerebral control if the dangers and dwarfings of arrested development are to be avoided.

The functionalization of the motor areas of the cortex is pretty nearly synonymous with intellectual growth and development, so intimately are these areas related to the impression receiving and transforming nerve masses, and since any procedure that aims for dexterity, for precision, for skill and speed must reach its goal by substituting a lower and racially older, for a higher and more recent nerve mechanism,--must debase the organism from a cerebral to a spinal level,--it follows inevitably that the needed stimulus and nourishment for the accessory brain structure, which was evolved along with and by reason of the accessory muscles in hand and wrist, and tongue and throat, and which nerve structure is least developed at birth, must be diverted to the fundamental low grade nerve centers, to the detriment of the individual

as a thinking human being. This, of course, in its extreme form has been seen over and over again in the exploitation of child labor in mills, cotton fields, mines, fisheries, etc.

These considerations have much to do with the methods, means and aims involved in establishing educative courses in any of the practical arts subjects in the secondary school, because first, these courses become available to the pupil in the very middle of the early adolescent period at which time the functionalization of the cortex is most rapid and important. Secondly, because any new course of study if not predominantly manual in character has no excuse for existence in high schools, overloaded as such schools now almost universally are with purely academic elements to the almost complete exclusion of normal physical activity with its cycle of sensori-motor impression and expression.

It must not be lost sight of, in this discussion, that all high school courses must be first, last, and all the time educational rather than occupational for the reason that education walks side by side with volition and development, while occupation is the companion of habituation and arrest.

It has been satisfactorily shown by the educational psychologist that all of the years below seventeen are years of growth, development, and adjustment, of trying and testing, of exploring and examining, and at the same time the industrialist has learned that economic efficiency in the manipulative arts, or in the use of mechanisms is unattainable below the same age. To introduce economic ideals and productive efficiency below seventeen is to cause arrest of the qualities that make for adaptation and at the same time to fix a low and unstable limit of possible motor efficiency.

This argument might seem to tend towards excluding occupational activities from the high school altogether and so it would if these activities were employed as ends instead of means. Here as elsewhere those activities that have been fundamental in the development of the race become fundamental as means in educating the young individual of the race, but, to use the same activity as an end and to work for efficiency through repetition and drill tends to arrest the young individual on the same level that the race occupied when the activity was fundamental. Kittens kept playing too long never become of any use as cats.

Hunting is a normal human tendency, it was a very vital activity in early racial days. Now every normal boy feels the grip of this primitive instinct at about the beginning of the eight to twelve-year period of low level, survival efficiency. Give the boy his bow and arrow, his shot gun and rifle, as a means of maturing this irrepressible instinct and he passes through and on strengthened and adjusted, to the next higher, food-getting activity; but let this same boy be required to hunt and fish for the purpose of helping to feed the family, let this become an occupational end, then at twenty-one he will become the shiftless, improvident, roving hunter, trapper and woodwise guide. Every community in the forested areas where game exists has its slouchy, unthrifty hunter, trapper and fisherman who with dog at heel will travel over mountain and morass, through flood and snow, day in and day out and yet will solemnly declare that his health is so precarious that work is an impossibility. Now, psychologically, what has really happened to these shiftless ones? Simply this, premature occupationalization of racially

primitive activities has arrested development on substantially the level of the North American Indian as that race was when Europeans first set foot on this continent. Nor will this man thus stopped in his normal development ever become a successful producer of food from the soil. He is a hunter and trapper and never becomes an agriculturist.

It is the hungry plasticity of the adolescent organism that determines the final result. The nerve and muscle tissues of the human pubescent, like the organized tissues of the maize plant at its adolescent climax, have an inherent tendency towards perfecting the functional power of the organism. This can not be accomplished if the deadening blight of self-support prematurely turns the blood supply with its upbuilding, nutritive material into the channels that feed the old pre-human nerve equipment, thereby diverting the nourishment that is demanded by the more recently evolved but less developed brain tissues. Nor can the corn plant perfect its ear even though the stalk as a whole contains an abundance of synthesized organic compounds, if an adverse environment obtains, such for example, as a lack of moisture, excessively low temperature, insufficiency of sunshine, etc.

In the animal world nature's way has always been to exclude drudgery while growth and development are having their innings. Lambs skip, kittens frolic, puppies bite and scratch and the young of wild animals are initiated into full maturity through a period of playfulness. This fact becomes progressively conspicuous as life becomes more and more intellectualized until in monkeys and finally in man, the young, during their greatly lengthened period of plasticity tend strongly towards intense physical activity under

the dominance of the play instinct rather than under the external stimulus of an economic necessity. It may be seriously doubted if education in its true adjustment-sense is possible with high school pupils under conditions where the motive is financial compensation for the effort put forth, or under conditions that stress the quantity of output because in either case the dominant tendency is to reduce the organism to an automaton, in order that facility may result.

The test then is not what the effect of the pupil has been upon the situation, but rather what the effect of the situation has been upon the pupil. Right here is found the fatal inherent defect in the schemes of the National Manufacturers' Association and their subsidized organizations and workers who, under the guise of a paternal philanthropy would hitch the educational equipment of the United States to the front doors of mills and factories in order that a supply of workers may pass from the school to the machine; workers arrested in their development on a low level where escape from the deadening grind of labor for bare existence is virtually impossible.

In a large city in this great Middle West a few years ago I had the pleasure of visiting a splendid mechanic arts high school where educational ideals prevailed and there I read in the faces and saw in the movements of the fourteen hundred boys then enrolled, the story of growth, development, and adjustment as these young adolescents, in a spirit of constructive enthusiasm, wholly divorced from economic ideals, made use of the mechanisms and processes of the industries under the guidance of men who knew boys and who knew something of pedagogy, and who could work with their hands.

In the same city I saw pupils in a trade school where the incentive was eight cents per hour and the promise of ten cents as soon as certain deftness of hand made a given measurable output possible. From a young and intelligent teacher in the foundry department of this latter school, I learned that it was very difficult to get these boys to study, or work on drawings, or to take notes at lectures because every boy was concerned chiefly with turning out a maximum of moulds ready for the metal. Now in terms of physiology, these boys were exercising their spinal ganglia instead of educating their cerebral hemisphere, that is, they were fixating themselves on a spinal level whereas the whole meaning of childhood and its evolution through education is wrapped up in the idea of liberating the child who is preeminently "a spinal creature at birth," by developing his super-spinal capacities through use.

The human mind, during the plastic early adolescent period at least, seems unable to thrive when attempting the seeming impossibility of following, at one and the same time, an educational and an occupational ideal.

"You can not serve God and Mammon." Neither can the educator press towards the goal of the dollar sign and the goal of organic adjustment at one and the same time. To commercialize education is to destroy civilization in the end because to successfully carry out some of the "vocational" schemes that are now on foot means to stifle intelligence at a level not much above that of our high grade defectives, the so-called morons, who are just able to support themselves but who are now regarded as requiring institutional care. A generation of factory educated adults would correspond quite closely with the enslaved races of

all ages since their relative standing would be one of abject-dependence upon their one meager talent which alone stands between squalor and starvation. We of the East in the past have seen such generations in our textile towns and you of this middle country have seen the same thing in your coal and iron industries. The human race was not evolved through the rattle and grind of factory and shop or the dust and darkness of the mine, but instead was built up little by little amid the natural influence of an environment of forest and stream, of sunlight and fresh air. And the human child during his advancement from savagery to civilization can not be normally developed through agencies that belong to a much later period.

There is no doubt some danger of a vicious and wholly unpedagogical interpretation of Doctor Hall's proposition quoted at the beginning. It is no doubt true as he says that "three-quarters of the appeal should be to the intelligence of the child" but this most certainly does not mean that this appeal shall come from a course external to and independent of the manipulative activity itself, as for example, from lectures, pictures, books, or make-believe constructions, etc. On the contrary, it does mean that the intellectual appeal must come with and through and by the motor acts; through stimuli originating from peripheral nerve contact with the world of things rather than centrally aroused stimuli; through personal experience; through the objective rather than the subjective world. Specifically this means that the manipulations involved in stock judging, for example, must of and by themselves call forth a mental reaction such as no textbook, no diagram, no picture can by any possibility even approximate. It is the finger-tips tracing out the milk veins, testing the

soft pliant skin, sensing the quality of the hair, that send inward the stimuli that result in nerve connections appropriate for the identification, at a later time, of a cow of like qualities, and these connections which constitute a part of the adjustments of a skilled stock judge, can come in no other way than through practice under competent guidance.

It is at this point that much of our practical arts pedagogy breaks down, partly because our teachers are inexperienced as teachers and partly because of a fatal encyclopaedic conception of the content of these courses thus both as to matter and method there is a very serious situation that does not promise well for the permanence of our work.

It is exceedingly unfortunate that all of the newer elements that have been brought into the common school curriculum should, from the start be handicapped by an attempt to bring them under the prevailing pedagogy that has long devalued the traditional subjects, such as the languages, mathematics, history, civics, etc.

It is natural, no doubt, to assume that if dead subjects such as Latin and Greek could survive a perverse pedagogy, then would the inherent vitality of such subjects as nature study, geography, physiology, agriculture, etc., serve as a kind of protection, but the facts are the reverse. No subjects suffer so much from a wrong-end-before-most pedagogy as do these that deal with life.—It does not require fire wardens and moth commissions to preserve the petrified forests of Arizona, but it does demand eternal vigilance to prevent the destruction of a living forest—and so dead subjects of the curriculum survive our abominable, inverted pedagogy while the living subjects languish.

We are confronted then by a very pressing question of methods and means.

Stript of all technicality, method is a way of doing some specific thing. Method may be good or bad, but to be good in a pedagogical sense it must be rational, direct, natural, and what is of most importance for our present consideration, it must be carefully framed to fit the physical and psychic needs of the pupil as he is, not as he was or as he will be.

This applied means that the method for nature study and geography in the elementary school is one thing, the method for agriculture in the secondary school is another thing, and the method for agriculture in the college is decidedly a third thing although it is the rule, and with very few exceptions too, that the college graduate teaches agriculture to the high school freshman exactly as he himself was taught in his junior and senior years in college, while the normal school graduate teaches the high school freshman as though he were a sixth grade pupil. The former, the college graduate, lightly steps over the trifling obstacle of six or eight years of experience that separates the high school beginner from the college graduate, while the latter, the normal school graduate, with equal thoughtlessness, discards the three prolific years from eleven to fourteen and repeats the annual bean sprouting and the pussy-willow and goldenrod campaigns that have already been waged for 10, these many years.

Method in general for the early adolescent must recognize the instinctive tendencies of this period.

The awkward, discoordinated organism has its crying needs at this time; the new-born emotions demand recognition and treatment; the instinct of migration and spirit of exploration which are now rife must be given much latitude, but above all these, the consuming desire to dabble and experiment, to contrive and construct, to improvise and invent, must be encouraged by offering an abundance of opportunity. This can not be provided in the classroom or laboratory. It must come from frequent, purposeful contact with forest and field, mountain and meadow, pasture and pond, with orchard and garden and from daily participation in the practical work of the barn and dairy house.

No real red-blooded boy ever satisfied the ball-playing instinct by a chimney-corner perusal of Spaulding's Baseball Guide. Neither will the high school boy profit by or have much interest in a purely textbook study of agriculture.

If the practical arts are to be profitably and permanently utilized as educative means in the public schools, they must satisfy the requirements of the educative process by providing both physical and mental activities that by their nature help to adjust the pupil subjectively and objectively; subjectively by effecting nerve and muscle coordinations essential to a maximum of adaptability; objectively by establishing such relationships between the pupil and his environment as shall tend, as the years go on, to ripen into habituated reactions, to existing conditions, such that usefulness to self and to society at large shall be a normal result.

Let me now ask you to consider the validity of the following propositions:

First: Intellectual life is so closely linked and dependent upon motor activity that hand work is an indispensable agent in education.

Second: For pupils of public school age, i.e., below seventeen or eighteen, all educative means and methods must aim to focus all inflowing stimuli upon the unorganized cerebral receiving cell masses and must particularly guard against arrest due to premature automatization through precocious vocationalization.

Third: For all practical arts courses, and preeminently so for agriculture, the concrete, experience getting processes must lead, to the end that "the practical technological side of science should precede its purer forms," as Doctor Hall has phrased it.

Fourth: The public school as a public charge is concerned chiefly in the problem of making useful citizens in the abstract and not lathe tenders, weavers, shoe makers, carpenters, pastry cooks, farmers, or any other type of specialized workers, and it is not at all interested in furnishing machinists or weavers or carpenters or artisans of any sort for those who in mill and shop would like to have an exhaustless supply of low priced, narrowly trained, (at public expense) dependent toilers, and who perforce must submit to the de-humanizing stop-watch methods of the new scientific management slavery.

From these four somewhat general propositions, let us approach the specific method of secondary school agriculture.

The study of agriculture begins logically with the study of soil, its origin in the solid rock crust of the earth, the processes by which this rock has been ground, disintegrated and decomposed into soil foundation, how this foundation has been modified by plant and animal life;

how air, moisture, heat, cold, and tillage have adapted the whole to the production of useful crops; how worn, or exhausted or "fatigued" soils may be restored, etc.

. The second step relates to crop production, beginning with horticulture and involving such problems as seed, seasons, culture, harvesting and use, not neglecting the relationship of insect life, harmful or beneficial. Horticulture is followed by field crops with their larger and more complicated problems, including, of course, the mechanisms and tools used in their production.

The third step has to do with animal husbandry, with its problems of breeding and feeding.

Most of the errors of method that are observed in the teaching of high school agriculture arise from a fatally false assumption that the approach to practice is along the avenue of abstract science. No assumption can be further from the truth. It is an old and much loved error, however, among pedagogues. The same error has made geometry an exercise in logic instead of the science of earth measuring. It has made the high school English recitation a clinic if not a post mortem investigation of the Mother Tongue; it has made nature study largely a peptonized academic biology; geography with its early chapters on the mechanism of the solar system, profusely illustrated with line drawings of such a nature that even adults get a wrong concept of solar and terrestrial relations, is floundering along as a mixture of celestial mechanics, unessential coast lines and artificial boundaries instead of being a real live subject dealing with tangible rocks, soils, hills, brooks,

basins, animals, products, industries, occupations, etc. Even the "dead languages" are not sufficiently dead to suit the makers of texts and are given an added touch of solemnity by an approach through the dim ghostly twilight of syntax.

Everybody knows that the laws of chemistry, physics and of biology grew out of a vast accumulation of experience with the phenomena of chemistry and physics and life and yet the mysteries of physiological botany are invoked to enable inexperienced boys to raise onions, a complete reversal of every known law of racial progress.

Pupils during early adolescence are not really interested in the function of potassium or phosphorus, or carbon, or hydrogen and oxygen as plant builders, but they are interested in testing and trying, and observing and recording the results that flow from mixing various fertilizing substances with the soil, and if this is on a scale sufficient to give products in large enough volume to be of use the meaning will be clearer and the adjustment more permanent and useful.

The study of the paper cow as a preparation for buying a good milk producer is futile and will never modify the finger-tip-cortex system that alone can tell the story of a soft glove-like skin. Even an accurate, well illustrated description of the teeth of a horse fails to register as experience or to develop power to discriminate between the horses of different ages when the actual necessity arises.

In all of this there is a complete reversal of factors. For example, an academic discussion of horses' teeth is not the beginning but the end of an effort designed to determine the age of the horse. The

true method is to examine the mouths of scores of horses of known age, and horses are abundant enough for that purpose. Then, from a week, or a month, if need be, of experience getting and recording by each member of the class, there will accumulate a sufficient mass of data in which the observed appearance of the teeth and the known age of the horses will enable the class to group this data and derive a tentative law, which subsequent experience is to modify, strengthen and validate. It might well become a part of this investigation to secure many molds or impressions of typical teeth by the use of wax, precisely as dentists fit us with crowns, caps, bridges, etc.

Is it done this way in high schools? Not to my knowledge.

If horses were very rare, no school would be adjudged complete probably until it had a museum specimen of a horse, or a papier mache model of one, or at least, a "stratified" cardboard horse where the skin is swung open like the outer door of a safe, the ribs following suit analogous to the inner safe door, and so on until the heart is reached as the cash box of the safe is disclosed by opening an inner door.

When may we expect to find pedagogy as it is practiced conforming to pedagogy as it is preached?

When will the study of a cow begin with the study of a cow rather than a printer's ink representation of a cow?

When may we expect to find teachers who not only know the chemistry of the crucible, but the chemistry of common every-day things as well?

When above all else may we reasonably hope to find teachers who can and do farm in the field instead of on a desk top, or who feed actual cows rather than the crayon cow of the blackboard, and who recognize and respect the principle that generalizations never grip the human mind until that mind is saturated with experienced phenomena that lead up to and prepare for the generalization?

The remedy for the conditions outlined consists in a clearer and more workable knowledge, on the part of the teacher, of the principles that underlie and govern the extension of human experience and the organization of that experience into motor tendencies.

The teacher must understand the adjustment cycle from impression through organization to expression and must understand that impressions come primarily through contact with the material world and that the experiences derived from any given situation are adjustive just in proportion as they appeal to and harmonize with instincts and habits. He must also see the necessity for a motor outflow in some worth while expressive act and provide ample opportunity for the same.

Teachers of agriculture, next to teachers of plays and games, are the most fortunate members of the profession, owing to the fact that the instincts to which this art makes its appeal are among the earliest and most fundamental of the distinctly human inheritances.

The domestication of plants, resulting in a controllable food supply, made permanent home life possible and this, of course, led to community life and a recognition of the rights of others and since it is a fundamental law that the great factors that opened the door to

survival, or comfort, or well-being for the race are dominating tendencies in the life of the individual at some period it, a priori, must be true, and as a matter of observation is true, that all normal children of both sexes have inherited from the race a compelling tendency to dig in the soil, to plant seeds, to watch growth and to enjoy the harvest of the products of their own creative effort. And this is the justification for courses in agriculture, certainly for boys, and probably to some extent for girls, also, during early adolescence.

Plant and animal breeding with its wonderful possibilities in propagation, crossing, feeding, etc., rests on an old phyletic foundation that dates to the time when man subdued and made use of wild animals as bearers of burdens and doers of work.

Rational pedagogy decrees that we make the largest possible use of these instincts by shaping method to meet their requirements, and by basing our projects on those instincts that are most fundamental. The tools of tillage are peculiarly adapted to restoring the disrupted coordinations of the adolescent crisis,--the axe, the hoe, scythe, grain cradle, flail, rake, fork, among the hand tools and the plow, planter, mowing machinery, potato digger, horserake, hay loader, reaper, threshing machine, milk separator, churn, butter maker, butter printer, among farm machines are very close to ideal agencies for giving "the larger muscles their innings."

Any method to be pedagogically sound must make use of these tools, not in a dilettante way, but on projects large enough to start the sweat, inflate the lungs and flush both muscle and nerve cells, and what is of

equal importance the "interest and intelligence" of the pupil must be reached through the causal relations that these tools and mechanisms and their use bear to the satisfactory results that are to follow and do follow.

Method, then, is not only concerned with tools and processes, plants and animals, but with projects and here it is that many fatal mistakes are made.

A project is "a definite piece of productive work with real things in which the end is seen by the pupil from the beginning." The very first requisite in selecting a project is that it shall be consistent with local conditions. This essential is violated in ways that would be laughable if they were not so serious.

The corn club cult seem to recognize no East, no West, no North, no South. Now in New England there is little excuse for this plan because New England corn ought to and does go into the silo, and the problem is not to produce a corn that will ripen but one that will not ripen because it is the optimum of digestible nutrients that is the goal. A corn that will ripen can not in the nature of things produce an optimum of food value for farm animals.

I have listened to a serious discussion of the merits and demerits of "hogging down" corn for our New Hampshire conditions but every fourteen-year-old boy, to say nothing of his shrewd Yankee father, knows that such a discussion is as futile in our part of the world as a discussion of the processes of producing bananas would be in Alaska.

Unless our teachers of agriculture learn to get a reasonable perspective for their work the common sense of the adult population will provide that perspective, the vanishing point of which will be the far end of the railroad track that takes the teacher out of town labelled "a misfit."

There is a prodigious amount of valuable material, scientific, practical, that has accumulated and is accumulating in the sixty odd State experiment stations and in the bureaus and divisions of the Department of Agriculture at Washington, but by far the larger part of this is to-day in cold storage so far as the farmer is concerned. Far too little of this filters down from the laboratory to the laborer, from the printing press to the producer and as I see this matter it must be the task of the teacher of agriculture in the secondary school to make use of so much of this material as can be adapted and adjusted to the powers, capacities and experience of the pupils taking these courses. It is this task of sorting, selecting, simplifying and reducing that offers the most serious difficulty.

Men of science express scientific concepts in a vocabulary of science that is incomprehensible to the high school pupil and until these concepts are approached through the concrete facts upon which they depend, until this language of science gives way to a language of common names for common phenomena, real meaning can not be discovered although memorized words may for the time seem like genuine mental coinage.

In conclusion let me summarize our difficulties:

First: In method. The real stumbling block to-day is a lack of

knowledge, on the part of teachers of agriculture, of the simple fundamental principles of pedagogy. This lack our agricultural colleges must provide for.

Second. In means. The fatal factor is the shot-gun type of text now in use that starts with a spectroscopic investigation of the nebula in Orion and ends with a discussion of radio-activity, omitting no department of human action or thought from plowing to the organization of the latest "rural uplift society."

Third: As to aims, the worst failures are due to a lack of orientation and an unwitting attempt at denaturing Nature.

The Chairman: We have a letter from Mr. Mairs of Pennsylvania saying he is unable to be with us to-day. I have asked Professor French to discuss this paper.

Professor French: This subject as Professor Whitcher has presented it has practically covered the ground we have been talking about all day. He has gone over the various fields as to what shall be taught and how it shall be taught. He has not said very much about who shall teach it. I agree with him and my observations are practically the same. I said so to Mr. Whitcher this afternoon. So far as the "general course" in agriculture is concerned, it has always resulted badly. Instead of creating an interest it creates a distaste. I can understand that it is largely due to the character of the teaching. I agree with you in the idea that we must use the concrete; we must study the real thing. That is not always an easy thing to do. The young man who has graduated from college where not all the material presented was in the concrete form

has not learned how to do that effectively and very few courses in agricultural education, so far as I know, give him that form of instruction. I am inclined to think we ought to include something of that kind in our courses in secondary agricultural education. In the course I present I try to do that but it is not entirely satisfactory as yet.

I agree with him perfectly in the statement that it is not the purpose of the public schools to turn out trained workmen. I have endeavored to give our young men going out to teach agriculture this idea. You are to use concrete material, you are to study local conditions, you are to get these young men to handle material with the view to making them students of the problems of the farm, and I say, that in general, it is not the function of the agricultural college to turn out expert farmers, but to turn out expert students. Of course, in Michigan, I presume it is so in some other States, the boy comes to the college with the wrong attitude of mind. You are all familiar with the fact that a few years ago a large number of the students who came from the farms entered the engineering courses and the students from the city the agricultural courses. Now that condition is reversed, and in our State eighty-five per cent of our students in agriculture now are from farms and they enter the college, for the most part, with no idea of teaching agriculture, but with the idea of either going direct to the farm or becoming a specialist in some line of agricultural work, research, etc. So it is out of that material we have to turn for our teachers. Boys who come to our high schools, for the most part, come there with the same old attitude against the farmer. They do not like the farm.

They have heard their fathers say they want their boys to get an education so they will not have to work as they had to work. The boy goes to school with that attitude, with the attitude that he knows all there is to know about agriculture, he can perform all the operations on the farm and does not need to learn them, and so our work must be to lead these boys to see there is something worth studying, that there is a real problem, and through investigation of that real problem we arouse their interest, and through that interest we arouse a desire to go further, and then we get at the last, the volition that leads him to do that thing. We are not necessarily teaching agriculture in our secondary school to make farmers but to arouse an interest and to make them students, to realize that there is something worth while in farming. We are going to get some of the material from textbooks, from the skilled teacher after he has had practice, and we are going to get a larger amount of that from the real farm itself. No young man is going out of college the first year and do that thing very successfully.

So far as the subjects that Mr. Whitcher and Mr. Jenks suggested this afternoon, I agree with them in the main, except in our work we change the order a little bit. The idea is exactly the same. I take this position, that plant and animal life have always been here, and these subjects constitute the ground work of all agricultural investigation, and so we begin our course, sometimes with a little work in general science if the teacher is ready, followed by botany, sometimes called agricultural botany,--the study of grain, seeds, weeds, etc. In the second year we take crops and horticulture. The plan of teaching

is the same. In the third year we give animal husbandry, including poultry, etc. In the last year we begin with soils though from one standpoint I would agree with you, but in this work there is another phase that has appealed to me. Ordinarily we teach botany in the ninth grade, in the tenth grade we usually have physiology and zoology, in the eleventh grade chemistry, and in the twelfth physics. These agricultural subjects should parallel in a measure the regular science work of the high school which the boy is going to take and so if it is not in the same year it is in the preceding year. In our schools we have zoology in the tenth grade. In the next year we take animal husbandry and in that same year he has studied chemistry so he is prepared and he wants to try out some of these things. The last year when he has had chemistry and is now studying some physics, is the time to take up soils and fertilizers. We study the soil so far as tillage is concerned in connection with crops, but we actually give the boy in the twelfth year an opportunity to try out some of the science he has secured. I do not call it original work or research, we actually have him do something with the soil. With that we are giving quite a little attention to the matter of what you may call farm management or farm economics, and more to farm machinery. We give a course in mechanical drawing and we make a special study of the typical farm machines. We have an outline which the boy takes as he goes to study the machine. He reports upon that and if he has not used it we see he gets an opportunity to use that machine some during the year. Then we make a study of the gas engine as applied to the farm power. In that way, just as far as we can, we are applying the science.

We are taking the agricultural subjects in a fairly logical way and we interest the boy from the student's standpoint all the way through. At least that is our aim. When he gets through he has the right attitude to the farm problem and he has some part in the solution of these problems and something of a vision of what he wants to do. As one young man said: I said, "Fred", what are you going to do when school is out?" He said, "Run the farm." I said, "What is the best thing you have gotten out of your high school course? What do you look back to with the greatest satisfaction?" He thought a few minutes. "Well, there is a farm out there of 160 acres. There are plenty of buildings but if you were up in an aeroplane you would think some one had shot them out of a shot gun and scattered them. There is not a pure-bred animal on the farm; an orchard without fruit. My mother does the house work with the same things her mother did. I think the best thing I have is the vision of what that farm is going to be when I have time to work out the problem." I think that boy gave the best definition of education of any one I have heard. He got the vision. I know of boys who would not give that sort of an answer, but I think we are trying to work in that direction. I think we ought to train our teachers with that same vision in our own minds, that that is what they are going out to do. They are not going out to teach technical agriculture so much as to interest and inspire these boys. I may be wrong but that is my attitude.

Mr. Jenks: I am surprised to find how nearly we are following the same line of thought. Professor French and Mr. Whitcher have admitted that I was right this afternoon, if they will remember one statement

I made. Professor French said he believed it possible to have a general course. Mr. Whitcher said practically the same thing. I said that that was the thing I thought we ought to work for. I also said if it meant simply a repetition of work given the next year it was not a good thing. The boys who are giving this work this year and gave it last year had this drilled into them. We must make that course a general course that can be built upon, and so far we have greater interest in the second year because of the first year's work.

I do not want you to get the idea I recommended a general course which would be the kind of a course which would never lead anywhere and simply have to be repeated, giving the idea of taking the same thing over again. If we can not get that general course so that the boy will understand that a paragraph in feeding does not prepare him to feed, I think we better leave it out. I think it is a thing that is possible and I recommended a textbook because I think it is inadvisable to start an inexperienced teacher out without a textbook. Textbooks are not what they should be but we have to get along with them until we can get something better. I think if the teacher does follow any textbook in existence now the condition might arise which would be discouraging instead of encouraging and if so I would be opposed to it.

Professor French: There are so many elements of danger I thought it would be better to put the boy right into something. Give him a vision of what is coming.

Professor Jenks: A teacher took a specialist's course and at the end of the year the high school students went to the principal

and asked to change the course and he wanted to know why. They said, "We do not want the word agriculture on our diplomas." We have another man in that school this year and in one-half year's time he has changed the attitude of those boys entirely. Those who did not want to take agriculture are enthusiastic over the work. I believe the personality of the teacher has more to do with it than the course given.

Professor French: I have looked into the matter of agriculture and I find it is largely a matter of the teacher. In physiology or chemistry it was the same thing. Agriculture is no exception as a teachable subject.

Professor Bricker: I believe the place for this general course is not at the end but at the beginning of the agricultural course. I think it is the pedagogical place for it. When the boy wants to specialize, as in agronomy, he will perhaps have a better conception of what he has to look for. The same thing in animal studies. It might be a fair warning to the boy who did not care anything about agriculture. It is time then for him to drop it.

Professor Works: I am quite in sympathy, I think, with the statements that have been made here so far as vocational education is concerned, only I am wondering how far the gentlemen will get when they say they do not want the schools to contribute to vocation. My point is this, you get practices with reference to farming that probably have greater educational value in and of themselves than do certain of our modern farm practices. You would prefer to teach this because of their greater educational value?

Professor Whitcher: There is more education in holding a hand plow than in riding a sulky driven plow.

Professor French: My idea in this secondary course, and what I insist upon is, they shall give to these boys the best modern farm practice, the best practice there is.

Professor Whitcher: In a great many instances the primitive tool would give the boy a better type of physical training and I would use the primitive tool, but I would have him know the perfected tool later on. In the conditions I am working under we can not use some of those extremely elaborate tools you can use in New York.

Professor Works: What I think is this. We all agree probably that the primary object of the institution is not the training of farmers, but, on the other hand, we think the institution ought to, so far as it goes, teach the best agricultural practice there is and realize on the educational side of it just as far as you can.

Mr. Jenks: If you are coming back to the matter of plowing, if we give exercises in plowing, do we want to give them from the standpoint of physical exercise or as a process in securing certain conditions in the soil which are of necessity for the best production of the crop? Do we want to make that an exercise in plowing or in high class tillage?

Professor Whitcher: Why not make it both?

Professor French: He is getting both. The large function, as I see it, is mental development, but he knows that points to the time when he is going to be a plowman and he is learning why it should be done in a certain way.

The Chairman: We will now listen to the report of the Resolution Committee.

Mr. Dennis: The Resolution Committee had a round-table conference and we have a few resolutions we would like to submit. We wish you to know that in the resolutions we have to submit we felt you would like to crystallize as much as possible the ideas of the conference. In other words, there ought to be a definite result of the conference in regard to holding these special conferences, and some general statement about some of the general things under discussion, and then perhaps future conferences could take these general statements and analyse them and go a little further with them.

RESOLUTIONS.

WHEREAS: There are many problems in connection with the establishment and development of an efficient system of agricultural education in the secondary schools of the various commonwealths, and

WHEREAS: These problems are of mutual interest to those in charge of Departments of Agricultural Education in the agricultural colleges of the various States and to those officials in State Departments of Education charged with the administering and supervision of public school agriculture, and

WHEREAS: The first District Conference on Secondary Agricultural Education, held at the Chittenden Hotel, Columbus, Ohio, on February 22, 1915, has proved to be a very profitable series of meetings,

BE IT RESOLVED: That these district conferences be continued, two conferences each year to be held, one during the month of November in connection with the meetings of the Association of American Agricultural

Colleges and Experiment Stations, and the other to be held at the discretion of the Office of Experiment Stations, U. S. Department of Agriculture, as to time and place.

BE IT FURTHER RESOLVED: That we urge the Office of Experiment Stations of the U. S. Department of Agriculture, and the U. S. Bureau of Education, to use their influence in bringing about a closer cooperation between the various organizations dealing with secondary agricultural education and perhaps a consolidation of some of these said organizations.

BE IT FURTHER RESOLVED: That it is the sense of this conference that teachers of secondary agriculture should be required to present a certain amount of training and preparation along the following lines:

- (a) In agricultural subjects.
- (b) In science.
- (c) In the humanistic branches.
- (d) In professional training and practice teaching.
- (e) In farm experience.
- (f) In specific work to be covered in the special methods work in agriculture.

Furthermore, they shall be graduates of standard agricultural colleges and ten per cent of their college course shall consist of professional training.

BE IT FURTHER RESOLVED: That the members of the conference here assembled do hereby express their appreciation for the efforts put forth by Mr. C. H. Lane, of the Office of Experiment Stations, of the U. S. Department of Agriculture, in arranging this conference.

BE IT FURTHER RESOLVED: That the members of the conference do hereby extend to Mr. C. H. Lane their sincere sympathy because of his sudden ill-

ness and they express the hope that he will be speedily restored to perfect health.

Signed. (L. H. Dennis, Chairman.
(Charles G. Maphis.
(W. H. French.

Committee on Resolutions.

After general discussion the resolutions as modified were adopted.

At the suggestion of Professor Jenks it was moved by Professor Hart and seconded by Mr. Dennis that the next program have a space devoted to the discussion of the elements of the course of study for the preparation of teachers of secondary agriculture. Motion carried.

Professor French: Whatever conclusions might be reached by this conference they would have to be presented to the committee on agricultural instruction in the Association of American Agricultural Colleges and Experiment Stations and not directly to that association.

Mr. Dennis: The purpose of this conference is to start a propaganda. Forces can be set into motion that will bring results.

The Chairman: Anything else.

Mr. Dennis: The following telegram has been sent to Mr. Lane, who is in the Allegheny General Hospital, at Pittsburgh, Pa.:

"Conference extends sincere sympathy to you in your illness. Cheer up. Your troublesome appendix will no longer bother you. Conference going splendidly and will be perpetuated. Hart, Whitcher, Works, Farrington, Maphis, Metzger, Jenks, Dennis, Foght, Bricker, French, present.

(Signed) Agricultural Conference."

The Chairman: If there is nothing more I declare this momentous meeting at an end and you are adjourned.

(Adjourned at 10.30 p.m.).

